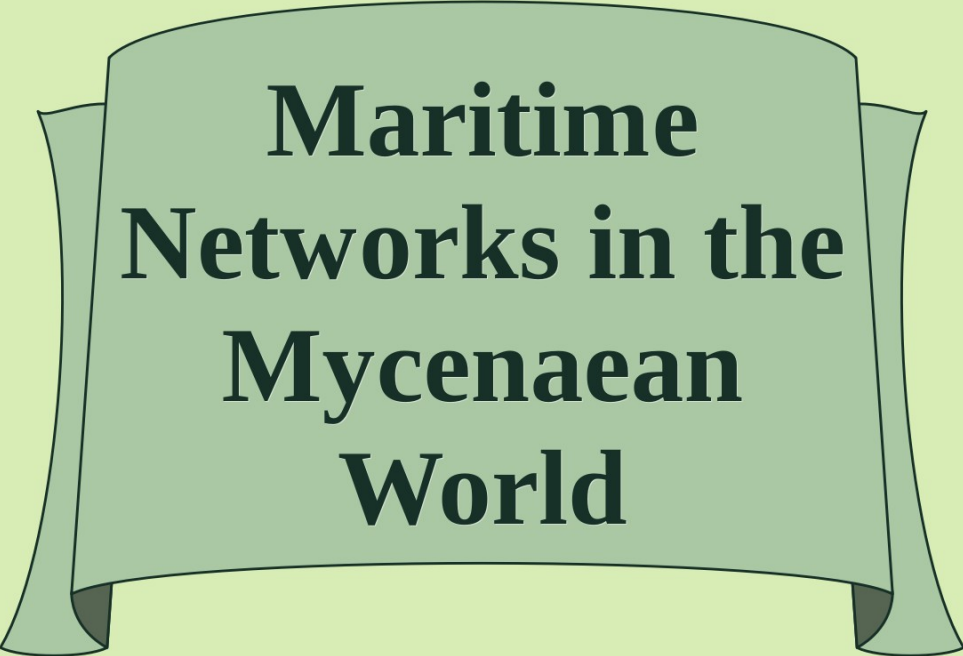




Maritime Networks in the Mycenaean World

**Blagg, Martin Millett
Thomas F. Tartaron**

The Early Roman Empire in the West

Edited by
Thomas Blagg
and Martin Millett



The Early Roman Empire in the West

edited by

Thomas Blagg and Martin Millett

Oxbow Books 1990

First published in the United Kingdom in 1990. Reprinted in 2016 by
OXBOW BOOKS
10 Hythe Bridge Street, Oxford OX1 2EW

and in the United States by
OXBOW BOOKS
1950 Lawrence Road, Havertown, PA 19083

© Oxbow Books and the individual contributors 1990

Paperback Edition: ISBN 978-1-84217-069-4
Digital Edition: ISBN 978-1-78570-381-2 (ePub)
Mobi Edition: ISBN 978-1-78570-382-9 (Mobi)

A CIP record for this book is available from the British Library

All rights reserved. No part of this book may be reproduced or transmitted in any form or by any means, electronic or mechanical including photocopying, recording or by any information storage and retrieval system, without permission from the publisher in writing.

For a complete list of Oxbow titles, please contact:

UNITED KINGDOM
Oxbow Books
Telephone (01865) 241249, Fax
(01865) 794449
Email: oxbow@oxbowbooks.com

www.oxbowbooks.com

UNITED STATES OF AMERICA
Oxbow Books
Telephone (800) 791-9354, Fax
(610) 853-9146
Email:
queries@casemateacademic.com
www.casemateacademic.com/oxbow

Oxbow Books is part of the Casemate Group

Contents

1. Introduction *by Thomas Blagg and Martin Millett*

Section I: Concepts of Empire and Romanization

2. The Creation of Provincial Landscape: the Roman Impact on Cisalpine Gaul *by Nicholas Purcell*
3. Romanization: a point of view *by Richard Reece*
4. Romanization: historical issues and archaeological interpretation *by Martin Millett*

Section II: Initial Contacts and Acculturation: The Northern Provinces

5. The Romanization of Belgic Gaul: some archaeological perspectives *by Colin Haselgrove*

6. Lower Germany: *plura consilio quam vi*: Proto-urban settlement developments and the integration of native society *by J. H. F. Bloemers*

7. Relations between Roman occupation and the *Limesvorland* in the province of Germania Inferior *by Jürgen Kunow*

8. Early Roman military installations and Ubian settlements in the Lower Rhine *by Michael Gechter*

9. By the northern shores of Ocean: Some observations on acculturation process at the edge of the Roman world *by S. D. Trow*

Section III: Urban Development – Hispania

10. Processes in the Development of the Coastal Communities of Hispania Citerior in the Republican Period *by Simon Keay*

11. Romanization and Urban Development in Lusitania *by Jonathan C. Edmondson*

12. Urban munificence and the growth of urban consciousness in Roman Spain *by Nicola Mackie*

Section IV: Cultural and Social Change

13. First-century Roman houses in Gaul and Britain *by T. F. C. Blagg*

14. For Better or Worse? Towards an Assessment of the Economic and Social Consequences of the Roman Conquest of Gaul *by J. F. Drinkwater*

15. The Emergence of Romano-Celtic Religion *by Anthony King*

List of Contributors

Thomas Blagg	School of Continuing Education, University of Kent, Canterbury
J. H. F. Bloemers	Albert Egges van Giffen Instituut voor Prae- en Protohistorie, Universiteit van Amsterdam
Jonathan C. Edmondson	Department of History, University of Sheffield
J. F. Drinkwater	Department of History, York University, Ontario
Michael Gechter	Rheinisches Amt für Bodendenkmalpflege, Bonn
Colin Haselgrove	Department of Archaeology, University of Durham
Simon Keay	Department of Archaeology, University of Southampton
Anthony King	Department of History, King Alfred's College, Winchester
Jürgen Kunow	Rheinisches Amt für Bodendenkmalpflege, Bonn
Nicola Mackie	Late of Department of Classics, University of Aberdeen
Martin Millett	Department of Archaeology, University of Durham
Nicholas Purcell	St John's College, Oxford
Richard Reece	Institute of Archaeology, University College London
S. D. Trow	Historic Buildings and Monuments Commission, London

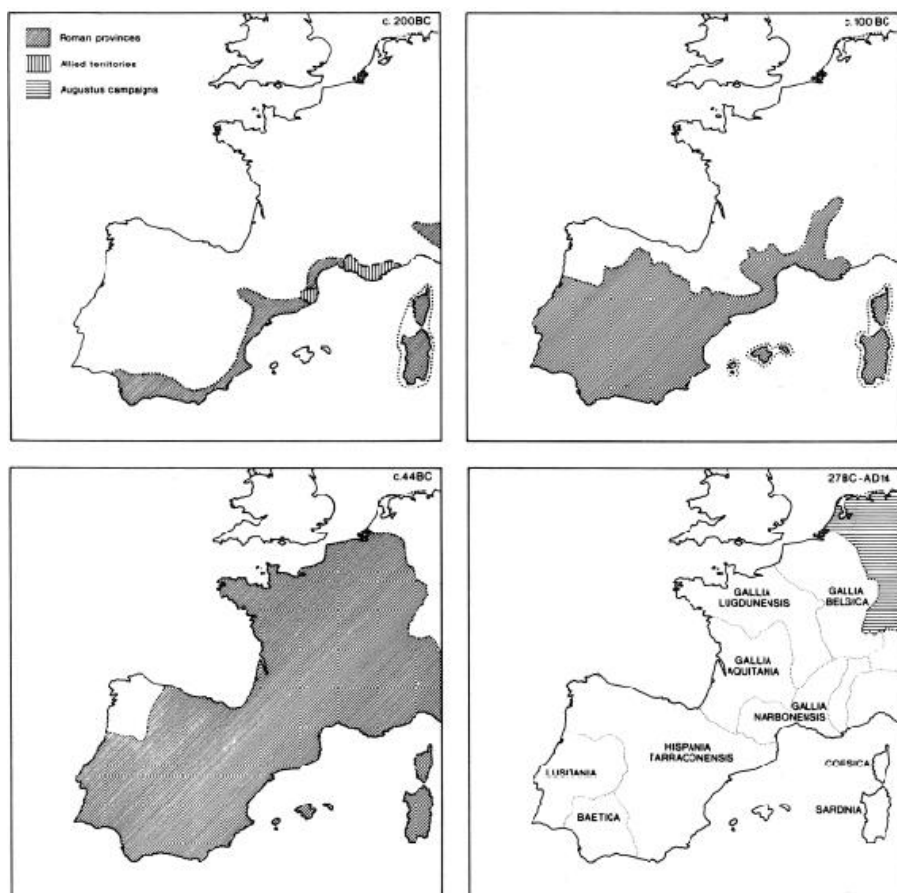


Fig. 1.1. The growth of the Roman west to AD 14.

1. Introduction

by Thomas Blagg and Martin Millett

Over recent years there has been an increasing interest in the issues surrounding the nature of the Roman Empire, and particularly in the manner of its expansion and its successful control of diverse and extensive territories. This interest has generated many new data, from field survey, from large-scale excavations, and from the study of artefacts – especially those (such as wine-amphorae) which provide evidence for posing and attempting to answer questions of general economic and social importance. Furthermore, a dissatisfaction with traditional approaches and explanations has generated debate among ancient historians and archaeologists, which has drawn on models derived from such other disciplines as anthropology and theoretical economics. This renewal of interest in Roman archaeology is paralleled by a new awareness of the value of historical periods for the development of archaeological methodology. In 1968 D. L. Clarke wrote “work in text-aided archaeology will increasingly provide vital experiments in which purely archaeological data may be controlled by documentary data, bearing in mind the inherent biases of both”. Roman archaeology has fruitfully fulfilled this prediction. The papers presented here illustrate this point by demonstrating the use of a variety of approaches which should be of interest to archaeologists outside the usual realms of Roman archaeology.

One particular area of interest and fruitful research has been the study of the interaction between Roman and native peoples and ideas in the formative years of the western Roman provinces. We thought it would be useful to bring together some of those who have been working recently on those subjects. Initially, this was to be for a conference, which was held at the University of Kent at Canterbury, 27-29 March 1987. We also believed that a book on the theme of the early Roman Empire in the West would be timely, and this volume is the result. From the start we aimed to produce not just a collection of conference papers, but a coherent volume, and we hope that it will seem so. The contributions are based on those which were given at the

conference, but most of them have been largely rewritten for publication.

The subject matter is very large, and within the intended scope of the volume one could not hope to be comprehensive, either in geographical coverage or in the range of topics. We intended that it should be a volume of essays for debate, which would be primarily thematic in their basic approach, but would collectively give a reasonably even coverage of the western European regions within the period from the initial Roman presence, whenever that happened to be, up to the end of the first century AD.

We asked our contributors to address one or more of the following themes: the nature of the military presence and the rapidity of conquest and subsequent demilitarization; the extent and nature of the integration of native societies within the Empire; the rates of urban development, of the development of trade and external contacts, and of that of agriculture, both before and after Roman invasion. These themes are present in all the contributions in varying proportions and combinations, and for the arrangement of the chapters of the book, a simpler scheme was required. According to the common or comparable elements they contained, the chapters seemed to us to fall into four main sections. The resulting arrangement is in part thematic and, rather by coincidence, in part geographic: it so happened, for example, that those papers in which urban development seemed the main common factor were also all concerned with the Hispanic provinces. There are also overlaps between the sections: thus, there are papers in sections other than that on urban development (III) which deal with the subject amongst other matters. Nevertheless, it seemed useful to group the papers as we have done, so that in the editorial preface to each section we could draw attention to the complementary, or in some cases contrasting, aspects of the authors' treatment of their subjects and the themes which they have in common. In introducing the volume as a whole, it remains for us to indicate some of the main points and areas of interest which have emerged.

Ideas about what the Roman Empire was, and about the process conveniently described as Romanization, will be found in all the papers, not just those in [Section I](#) which have those concepts as their main concerns. Common to many of them is an interest in observing not only the consequences of Roman conquest for the native peoples, for good or bad (Drinkwater) but also those peoples' own rôles in the processes, active and passive. Thus, for Millett, Romanization is a two-way process, and for Edmondson, it is not "a cultural matrix imposed

on a native by Rome". Haselgrove's observation that it represents "the aggregate outcome of processes operating at an essentially local level, people by people" is a reminder of the complexity of regional variation which may be obscured by generalized interpretations. It is also a reminder of the fundamentally archaeological nature of this approach, since the evidence itself is the aggregate of essentially local excavations and field surveys, region by region.

This is relevant, first, to the study of the conquest and the initial responsiveness of native populations to Roman ideas. One way of looking at this in recent years has been through application of the concepts of world-systems theories related to colonial imperialism, in particular those which contrast activities at, and relationships between, the core and the periphery of a system. Bloemers uses this approach in formulating his examination of the factors which encouraged, or discouraged, the development of urban settlement in Lower Germany. Kunow, by contrast, is concerned with explaining the non-Romanization of Germany east of the Rhine, and he applies Galtung's model of imperialism (1972), which is basically that the more developed the social system of the periphery, the easier it is to occupy and integrate. Kunow's argument is that Rome did not conquer the Germans because it lacked the sort of links with the German nobility which it had with the more socially developed élite of Gaul. Much therefore depends on the nature of the local élite, and we will revert to that point shortly.

In some cases, however, relative differences in the rate of Romanization depended directly on military and political factors operating at the centre of the system. As several contributors remark, the initiatives of Augustus were of critical importance in the development of the Gaulish and Spanish provinces, in relation to local governmental organization, the laying out of road systems, the creation of new cities, and the making of censuses for purposes of taxation. The relationship of taxation to the development of the Roman economy and of Roman trade has been the subject of much recent debate among historians. Keith Hopkins' thesis (1980), that the economy of the relatively unsophisticated peripheral regions was stimulated to surplus production, and thus to increased trade, by the need to pay imposed Roman taxes, is followed in several of the chapters, though doubted by Millett. Relevant here is the extent and rôle of native coin use, which seems to have been more stimulating to markets in Tarraconensis (Keay) than in Belgic Gaul (Haselgrove). The agricultural infrastructure of the economy, or rather, of local economies, whether coin-using or not, must be seen as fundamental in

explaining variations in the rate of Romanization, and in particular, associated changes (or otherwise) in the pattern of settlement. Within both Lusitania (Edmondson) and Britain (Trow) there was considerable diversity of response, notably in what happened to hill-fort settlements. Direct Roman intervention accounts for some of the changes, for example the resettlement of Gallo-Romans round Nijmegen (Bloemers) or the establishment of the Ubii in their new colony at Cologne (Gechter).

There would appear to be a general consensus, despite the last point, that in general Rome was much more *laissez-faire* in its government than more recent colonial empires. Indeed, it did not have the bureaucratic apparatus to sustain widespread central interventionism, or even the degree of formulated policy and effective control that has often been assumed. Nevertheless, as King points out, in discussing religion, the Druids were suppressed, and the imperial cult was promoted, and both must be seen as official policy.

Such official acts could only in part account for the Romanization of native culture which is manifest in other aspects of religion, e.g. the adaption of native religious cults to Roman iconographic and architectural forms, and in the adoption of the Latin language, to which several contributors call attention. What Ramsay MacMullen (1982) has called the Roman epigraphic habit was not acquired uniformly: the Hispanic provinces were much more articulate than those in the north-west in that respect, though the reasons for this need more investigation.

As with the initial reception of Roman conquest, so with Roman culture, much of the answer seems to lie with the local élites. In the centuriation of the Po valley (Purcell), the inscriptions which call attention to urban munificence in Spain (Mackie), or Gaulish and British houses with courtyards and reception rooms (Blagg), we see the adoption of the “*mentalité*” of the Roman élite class in new surroundings. The cooperation of local native élites was essential to the government, stability and duration of the Empire. This could only be ensured because Roman material culture provided them with means of maintaining or enhancing the prestige of their own positions. As Trow points out, that process was already operating before the Roman conquest of Britain (as indeed was the case in other areas), and also, it was open to change, since the more widespread the Roman cultural trait became, so proportionately did its prestige value diminish. It must also be noted that the élite may seem significant because it is archaeologically “visible”, more so than the great mass of the population, who are also historically inaudible most of the time.

The relationship between archaeological and written sources, and the nature of historical archaeology, are illuminated in several contributions. Too often, in a historically documented period, the function of the archaeologist has been perceived by some as limited to investigating those areas which the written sources do not reach. Others, considering that the historical sources have long been known and are not going to increase significantly, see archaeology as the only key to new knowledge and understanding. There is truth in both views, but each neglects the value of the combination of resources. Archaeological evidence can correct bias or omission in written sources, e.g. in what Strabo said about Lusitania, and modern historians' deductions from it (Edmondson); it can amplify them, e.g. on the aftermath of the Second Punic War in Spain (Keay); or it can conflict with them, as in relation to Druidic Gaulish religion (King). It provides means of testing propositions based on written sources, as Kunow illustrates for the Limesvorland in Lower Germany. New questions can be asked of the written sources from the archaeological standpoints of topography and material culture, as Purcell does in considering how the Romans themselves perceived their landscape. The main point to emerge, however, relates to and provokes questions rather than answers. For example, there is much new evidence from intensive field surveys in the past decade, the results of which are important components of several chapters (Bloemers, Keay, Kunow). Haselgrove asks, however, whether these projects are delivering the information sought, and whether we are asking the right questions of it, i.e. questions which it is capable of answering. Reece, who believes that the combination of historical and archaeological evidence results only in confusion, reminds us that, while we try to explain our evidence within the context of the Roman Empire, it could be part of larger patterns of events which had little to do with the Empire as such.

As we wrote above, we intended that the contributions to this book should represent the new discoveries, and the debate in ideas and interpretations, which have made the early Roman Empire in the west a subject of particular interest in recent years. While, in this introduction, we have tried to select and integrate some of the common elements with which the book's contributors have been concerned, it seems appropriate to conclude it on the note of archaeological and historical enquiry in the discussion just summarized.

References

Clark, D. L. 1968: *Analytical Archaeology*, London

Galtung, J. 1972: 'Eine strukturelle Theorie des Imperialismus', *Imperialismus und strukturelle Gewalt. Analysen über abhängige Reproduktion*, (ed. D. Senghaas)

Hopkins, K. 1980: 'Taxes and trade in the Roman Empire', *J. Roman Stud.* 70, 101-25

MacMullen, R. 1982: "The Epigraphic Habit in the Roman Empire", *American Journal of Philology* 103, 233-46 '

Section I

Concepts of Empire and Romanization

It is an essential first stage in studying the development of the western provinces of the Roman Empire to examine the perceptions of what that Empire was, and what we understand by the process of its Romanization. The papers in this section approach these matters from three contrasting standpoints.

Purcell investigates how the Romans themselves saw their Empire, given that their concepts of geography and landscape evolved without any idea of the accurate topographical map-making and -reading which are basic to our own comprehension of spatial relationships. He illustrates this mainly from Cisalpine Gaul, where Roman roads and the centuriation of land were part of a political reorganization of the landscape. This was a display of power, but it also illustrates the Romans' underlying conceptualization, their commitment to creating a new productivity, and the foundation of means of communication, and thus cohesion, with Rome and between previously unconnected areas.

Reece, by contrast, is concerned with the fundamental problem of defining a point from which to view 'Romanization' in objective terms; to judge how far the assimilations were consequences of Roman conquest, or otherwise the results of wider processes of change operating within the geographical area of which the Roman Empire happened to be part. The Roman historian or archaeologist may identify with a Rome-centred perception of what happened in the Empire, but this is merely one of the relative positions from which to attempt to interpret the observable changes in material culture. The theory of relativity emphasises the uncertainties inherent in such interpretations.

Millett's concern with the application of archaeological evidence to questions of Romanization is more pragmatic. He sees Romanization as a two-way process, and emphasises that Roman imperialism depended administratively on the adaptability of local élites. Contrary

to the common assumption, he would see the army's presence as an obstacle to Romanization, in inhibiting local self-administration, and he suggests that Augustan reforms in administration and taxation encourages the more rapid development seen in the archaeological evidence during the Principate when compared with the Republic. Native élites adopted Roman forms of material culture to maintain their social prestige. This view of cultural assimilation contrasts with those of Wallerstein (1971) and his followers which envisages Rome as a 'World-system' of planned economic exploitation.

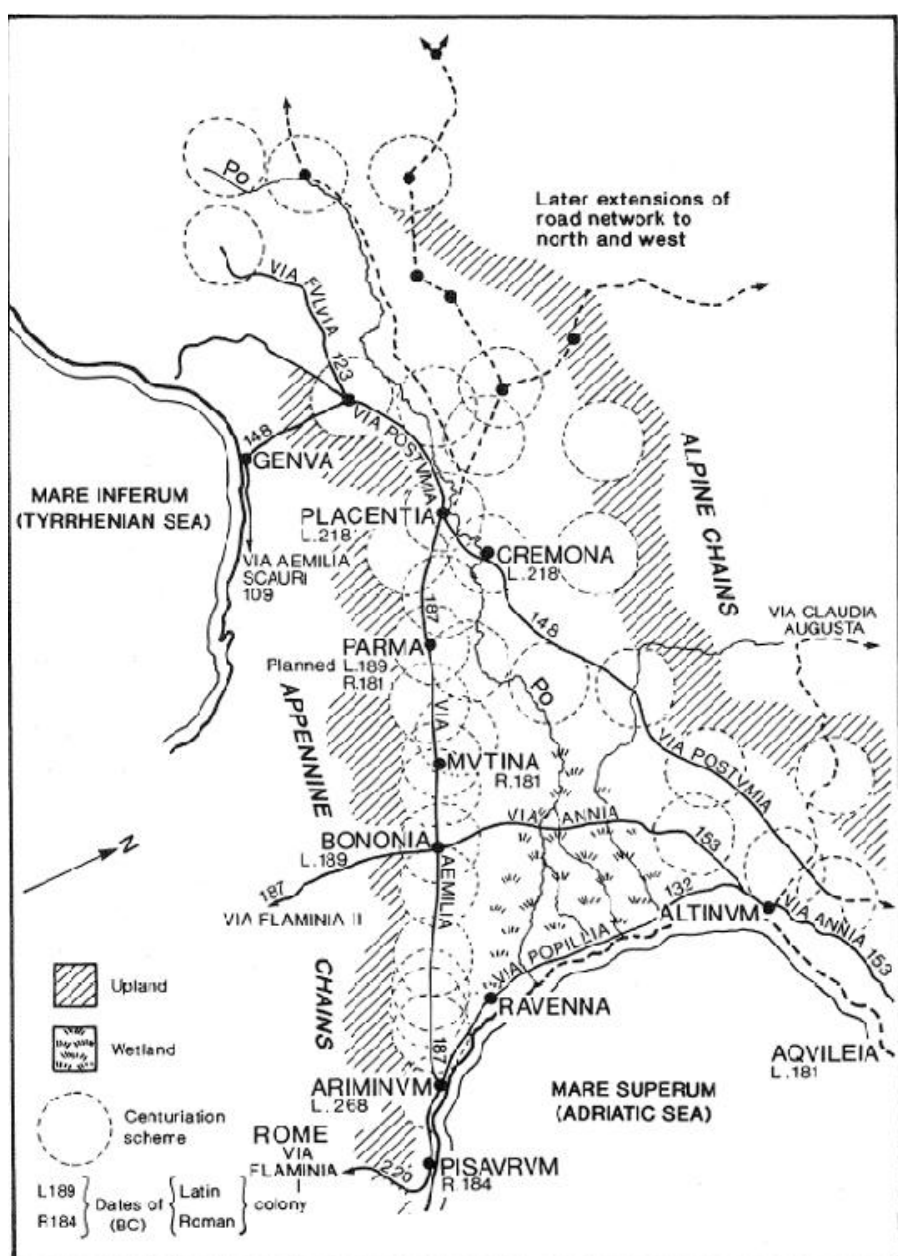


Fig. 2.1. Cisalpine Gaul. Second century BC and earlier coloniae and roads. Rings are territoria with centuriation.

2. The Creation of Provincial Landscape: the Roman Impact on Cisalpine Gaul¹

by Nicholas Purcell

Se yonder, loo, the Galaxie
Which men clepeth the Milky Wey
For hit ys whit (and somme, parfey
Kallen hyt Watlynge Strete)

Geoffrey Chaucer, *The House of Fame* II, 936-9

Introduction

In the year AD 75, the imperial legate of Syria, M. Ulpius Traianus, supervising detachments of four legions and twenty auxiliary cohorts, was responsible for the building of a canal on the river Orontes above Antioch, in the name of the emperor Vespasian and his sons Titus and Domitian (Van Berchem 1983). The place was christened *Dipotamia*, Two Rivers; the new canal, three miles long, is described as ‘channelling the river’, *fluminis ductus*. The project included a series of bridges; and inscriptions, on great stone markers like the milestones of imperial Roman roads, make emphatic the ultimate imperial responsibility and the great size of the military workforce involved. It is the recent publication of one of these which informs us for the first time about the project. Two aspects of this undertaking are of particular importance. First, the construction is clearly conceived of as being analogous to the building of a great military road, *viae munitio*; the ‘milestones’ and the military labour, as well as the language used, make that clear. Second, the harnessing of the great river Orontes is stressed: the power of the emperor, his legate and Rome over the dominant element in the landscape of Syria is demonstrated by the naming of the place (a new, equal, Orontes has been called into existence) and by the phrase *fluminis ductus* (which immediately brings to mind the great artificial rivers, *aquarum ductus*, aqueducts, which demonstrated Roman control over nature in the water supply so showily provided for the cities of the Empire²).

Traianus it probably was also under whose auspices the road

network of central Anatolia and the Cappadocian frontier was greatly extended; his son was thus enabled, as emperor, to create a single planned network of roads from Trebizond on the Black Sea through Syria and the new province of Arabia to the Gulf of Aqaba and the Red Sea. Trajan equally is the builder of the Via Traiana in Apulia and of the Danube bridge and ship-canal at the Iron Gates, the emperor to whom the younger Pliny proposed the Bithynian canal scheme, who removed whole hills of rock for his building schemes at Tarracina and Rome, marking the height of what he had removed in the latter case with his celebrated column, and who formed safe harbours where no natural port existed at Ostia, Ancona, Tarracina and Centumcellae. His adopted son in turn bridged the Tyne and linked the work with a defensive system as his father did on the Danube, the greatest monument to military piecework from the Roman period, Hadrian's Wall, spanning a province from estuary to estuary, like a highway but more monumental.³ These three generations of Roman rulers represent the acme of responses to the physical circumstances of provinces, east or west, which we associate with the high Empire. While these examples may indeed be supereminent in scale, what I hope to show in this paper is that they are not novel in conception, but rather are grander versions of forms of imperial behaviour which the Romans evolved in the middle Republic, and which can be seen very clearly in action in Cisalpine Gaul in the period of three hundred years which separated the First Punic War from the conquest of Britain by Claudius. These forms of behaviour are so proverbially Roman that they can escape the searching enquiry, why did the Romans do this kind of thing? Not from some genetic ability at engineering, nor by accident. The reasons which I advance for this continuity of response are connected closely with the Romans' conceptualization of geography and landscape and their view of what effect they could have on them.

Geography has often been emphasized in discussions of Roman imperialism. It has been said that geographical ignorance led the Romans to overreach themselves in northern Europe in the time of Augustus (Brunt 1963, 175); in the previous period a close association of Roman imperialism with Greek geography has been perceived, and Polybius, Poseidonius, Caesar's *Commentarii* and Strabo examined from this point of view (eg. Nicolet 1978, 887-90; compare Nicolet 1988 and the suggestion of Lind 1986). At least one important recent discussion (Harris 1984, 22-3) prefers to consider the actual behaviour of the Romans in making and implementing military and diplomatic decisions, regarding the geographical question as something of a side-

issue. This is perhaps because the geographical case has hitherto usually been expressed in too limited terms. In particular, scholars have taken for granted the thought-world of easy, habitual map-literacy. It is hard for us properly to conceive of ancient geographical ignorance, which is a wholly different ignorance from that expressed by the words *terra incognita* on the maps of the late medieval and early modern periods. We must expunge the Voyages of Discovery from our way of thinking if we are to begin to understand how the Romans saw 'new' lands.

One of the first consequences should be that we are cautious about saying, colloquially, and comfortably enough for the thought-world of today, that the Romans 'conquered an area'. Roman imperial behaviour will not be understood until we can say what 'conquest', 'annexation', 'subjugation', 'acquisition' meant in actuality: and, equally important, *what were the proper objects* of these various processes.⁴ Ethnic terms for races or peoples, political terms for kingdoms or states, are common objects: geographical ones are not. The 'regional' names of the Roman provinces as they develop are much more closely related to the ethnic or the political than to pure geography – Cyrenaica, Bithynia; kingdoms: Galatia, Numidia; the collectivity of those peoples. Once this has been accepted, however, we can turn to the real instances of geographical understanding, and attempt to assess the much less common, but highly significant, occasions on which the power of Rome was expressed in relation to the landscape of the world.

Rome's empire remained 'cellular' until at least the third century AD – a great mass of individual units whose only common matrix was relationship to Rome, though that could take many different forms. The formation of piecemeal relationships with thousands of cellular entities is reflected in the language of Roman imperialism described above, with its emphasis on the social or political unit. This underdeveloped administration (compare Garnsey and Saller 1987, 20-40) was the inevitable response of a city-state whose magistracies, like those of almost all ancient communities, had, as I have argued elsewhere (Purcell 1985), only three basic models for executive government: the judge's verdict, the slaveowner's command, the officer's order. Nor could more be expected in a world of slow and haphazard communication between ruled and ruler: the randomness of administrative decision-making and the passivity of those in charge have been established by the work of Fergus Millar (especially 1977). Against this background, however, the historian has to set the deliberately grand gestures of Rome in the provinces and in Italy, like

the examples from the late first and early second century with which this *Introduction* opened. The Romans did not have the help of concepts like 'Iberian peninsula' or 'North German Plain'. But their roads and frontier systems at least span distances of hundreds of miles; some, at least, of their decisions embraced thousands of communities rather than single cellular entities. An investigation into the Romans' attitude to geographical space should illuminate how this became possible, and also clarify the nature of the boundary zone between core and periphery in the Empire, which is the subject of other papers in this volume, and of the difference between the two. It should also help understand the decisions taken by the Romans and their impact on their subjects and the nature of the process which we usually know as 'Romanization'.

Cisalpine Gaul is an excellent case in relation to which we can pose questions about Roman definitions of and responses to the natural and human landscapes, because both forms of landscape are relatively distinct and unusual there. It is a crucial example of Roman imperial experience, in which the various *mentalités* of imperial control, whether more 'social' or more 'military' (and perhaps we should aim to weaken that dichotomy) can be examined. The main focus of discussion of second century Roman 'imperialism', it has been said, 'ought to be Spain and more importantly still, North Italy' since here the Romans displayed 'a consistent and unrelenting combination of imperialism, militarism, expansionism and colonialism' (Millar 1984, 1). This study hopes to help show why that is true, and to analyse in greater depth the behaviour described in that quotation with those four forceful abstract nouns.

*Conquest and the definition of space*⁵

The Mediterranean world is very big, and the intuitive capacity of the human senses for regions is small. This is a truism which armchair historians need to recall constantly. Valley succeeds valley, plain plain and hill hill beyond hope of easy recall, and no ancient map ever even attempts to set forth the pattern of microregions into which the land divided (Janni 1984). Cisalpine Gaul was one of the largest readily perceptible regions in the Mediterranean basin; it was defined for any observer by the impressive sweep of the snowy Alps, and scarcely less so by the prominence of the Po, a watercourse of unmistakeable superiority at least between its juncture with the Tanarus and its mouth (Harris 1989). But notions of how this readily comprehended place abutted on the Danube lands, or the labyrinth of Alpine valleys, or

even the tangled glens of the Ligurian and Umbrian Appennines, are not to be taken for granted. To put it simply: how would a Roman who fought in the armies which defeated Pyrrhus think of the journey from the Tyrrhenian Sea through the Po valley to the Adriatic? And how would the consuls who led those armies think of it? Neither soldier nor general had ever seen a topographical map of Northern Italy.

There are, I think, five possible answers apart from total ignorance. If the individual had done such a journey, which is perhaps not likely, or had spoken to people who had, it is possible that a parrot-fashion route-account of ascent, descent, ford, forest, spring and col could describe the journey from sea to sea. Combined, or separate, could be the 'view' notion just described; the curve of the Alps, the great hollow of the low plain, seen perhaps from the high pasture of the Appennines (thus, interestingly, Strabo (5, 1, 1) on Cisalpina as a 'gulf': the language is the coastal vocabulary of *periplous*). Experience direct or indirect could tell of the characteristic climate, soil, environment of Cisalpina – but that is not any help in relating it to the Ligurian coastlands. Knowledge of the nearest places to which Romans went might produce a sense of Cisalpina being the next place, the land of the Gauls, a zone of danger and alienness: for the Romans had since the beginning of the fourth century been justifiably nervous of Gallic power (*I Galli in Italia* 1979).⁶

But there is a fifth possibility which is perhaps more interesting. During the fifth century BC Greek thinkers had evolved new ways of thinking about space. On the small scale urban morphology seems to have attracted theoretical attention from Hippodamus of Miletus; it remains controversial whether or not he was also concerned with surveying and the division of rural space. On a larger scale however, this is the period of origin of what might be called a 'geometric' perception of the layout, on a very large scale, of the world in general. These investigations, most familiar to us in the attention paid by Herodotus (II 33-4) to the overarching symmetries of river, sea and landmass, did not conduce to topographical accuracy: the small scale irregularities might indeed spoil the order and system of the grand design. But during the fourth century the framework could be employed as the backdrop to increasingly self-conscious 'explorations' linked with political and military events in west and east. In the west the researches and presentations of Timaeus of Tauromenium were the culmination of the process. As the Romans began to insert themselves into the wider Hellenic world of the late fourth and early third century, his work was new and influential. Can we observe any

possible reflection of the ways of thinking of this Greek tradition in Roman behaviour in the third century, the time when Rome began to have contact with Cisalpine Gaul?⁷

What we should be looking for are signs of a consciousness of the whole Italian peninsula as a single entity. There are indeed actions by Rome which suggest a new confidence in disposing for a wider region than ever before in an integrated way. The decisive point of contact with Cisalpine Gaul (despite earlier presence on the Adriatic coast) was the foundation of Ariminum in 268 BC. The striking thing is that this seems to be part of a concerted strategy which included the simultaneous foundation of Beneventum in the southern sphere of Roman activity. Ariminum, moreover, was the first in a sequence of twelve new-style more powerful higher status Latin *coloniae* (Salmon 1970, 92-4 cf. Salmon 1982) which seem to have replaced the old strategy of founding new rural *tribus* piecemeal. All this appears against the background of a new confident style of dividing land (which is considered below, [pp. 15-19](#)), building networks of treaties (in the north, for example, with Sarsina and Ravenna; cf. Luraschi 1979) and moving populations around wholesale, above all at Falerii and Volsinii. It would not be unreasonable to suppose that novel attitudes accompanied these novel forms of activity, and to associate these attitudes with cultural developments in the Hellenic world.⁸ But it would be a mistake to see too early an ability on the part of the Romans to grasp the complex approaches to space which underlay their later military and governmental behaviour. If there is a new view of peninsular Italy, and it is true, as we shall see, that much of the repertoire of Roman imperialism has its roots in the late fourth and early third century, we still do not need to go farther than the needs of short term security in explaining it. Indeed the recent work of Arthur Eckstein (1987) takes the view that relatively uncoordinated responses to a highly dangerous Celtic threat lay behind Roman policy until the second quarter of the second century, a view which tallies very well with the evolution of Roman thinking suggested here.

The geographical view of this early period is likely to have emphasized the Po (sources in Chevallier 1980, 8-11), and probably the Alpine chain, so immediately visible to the traveller. But the latter is oddly late in appearing (in the early to mid second century; Chevallier 1980, 39-40) and that it then does so in the context of the commonplace of the defences of Italy suggests that, somewhat paradoxically, Hannibal's famous crossing may have done much to establish the Alps as a barrier (contra, eg. Salmon 1982). The tradition on the Po (Chevallier 1989, 78-98) puts it in the context of the

simplified 'grand design' approach of the 'geometric' world view with its schematic coincidences – it rises appropriately from the highest peak of the Alps, and has a miraculous underground section like the Nile: it is second only to the Danube among the great rivers of Europe (Strabo 4, 6, 5). Some of this goes back, no doubt, to Timaeus (Grilli 1979), who improved on his predecessors' views of the Adriatic coast too (Janni 1984, 96-7); but Polybius in the mid second century found a great deal in Timaeus to disagree with in his turn, and gives us (II, 14, 6; 15, 9-10) what has been called the beginning of a scientific understanding of Cisalpina (Chevallier 1980, 11); part, perhaps one should rather say, of a new way of looking at the world to be associated with Roman conquest (a way which was to have a rich sequence of descendants in later Roman attitudes to 'frontier rivers', cf. p. 22 below). Before that conditions hardly encouraged more.

Not only was Cisalpina the home of the terribly alien Gauls, but it was also far from ethnically homogeneous or isolated. The Gauls retained frequent social links across the Alps through which there was continuous movement (Tizzoni 1981, cf. Eckstein 1987, 12-13); note the exodus of the Boii in 191. The settlements of the coastal wetlands were in close contact with the primarily Hellenic economic and cultural world; some of the settlements of the central plain retained social and even political traces of contacts with Etruscan and Umbrian culture from beyond the Appennines; peoples like the Veneti were of different origin altogether and preserved fertile links across the Julian Alps with central Europe to the north-west (Ridgway and Ridgway 1979, 419-487, Dyson 1985, 46-7). The fusion of these various elements produced a fertile and quickly-changing society, as rich in potential as Gaul or southern Britain before the Roman conquest. If the Gauls were alien, they were not to be perceived as savages.⁹

It is important not to retroject, from the prevailing view of the imperial period, a model for Roman/alien contacts which includes too steep a cultural gradient between the two. Cisalpine Gaul was for the Romans of the third and second century a new and, to some extent, strange place; it was on the edge of the zones in which their decisions usually had force; it was vulnerable to the hostility of its neighbours who were more remote from the usual channels of Roman intervention. But to call it a 'frontier province' entails a vision of Roman power spreading into the world like ripples on a still pond which did not occur to observers in the Republic (if ever). Places with which the Romans were involved were everywhere liable to aggression: each theatre of operations had its own character and its own relationship to the City. Cisalpina was just one among dozens of

such theatres. The notion of 'frontier', moreover, suggests perceived cultural backwardness; Cisalpina could not be regarded as different from Samnium or Baetica in this respect when compared with the Roman homeland. In fact part of what distinguished Cisalpina was its wealth and cultural potential. This is perhaps the principal difficulty with Steven Dyson's recent and original study *The Creation of the Roman Frontier* (Dyson 1985); it involves the marginalization and barbarization of the region through transposing from the Empire the language of 'Roman frontier commanders' and their attitude to 'thinly populated zones' (p.63) or 'underused Celtic land' (p.24), and above all, the notion of 'buffers' (eg. p. 51).¹⁰ All Roman interests needed to be protected; the non-Roman in the world was vast, indescribable and undifferentiated; there was no place before the late Republic for the type of relationship with a particular foreign power which makes it desirable to form a third entity as a buffer in between. Rome's boundaries were changing, not in place only, but in kind, constantly; too simple a notion of frontiers obscures how Rome actually developed new types of edge to the areas of her concerns over the centuries.¹¹

For the Romans of the first half of the third century the strip of coastal plain south of Ariminum was The Gallic Territory, *ager Gallicus*. From 268 Ariminum had its own city territory, beyond which came the land of allied Ravenna. Where and what was the 'frontier'? The Romans crossed it for ever, decisively, in the ferocious Gallic War of 225-2, a sudden increase in the order of magnitude of their involvement in the area, whether it is seen as the result of Gallic belligerence and Roman fear (Eckstein 1987, 12-18) or simply as nakedly aggressive (Harris 1979, 197-200). The numerous peoples of the Boii were obliterated and the Insubrians humiliated. Now many Romans and their allies had first-hand experience of Cisalpine Gaul.

The practical topographical experience in question is less important than two other steps. C. Flaminius, as consul in 223 BC, or more probably as censor in 220 BC (Wiseman 1970, 143), built the great road that bears his name, the Via Flaminia, from Rome to Ariminum; and in 218, 160 miles into the heart of Cisalpina, the two large Latin *coloniae* of Cremona and Placentia were established. Both moves speak of new ambitions in the region; indeed they should probably be seen as closely associated. The nature of the association and the wider significance of road-building and of the land allotment which accompanied the foundation of a *colonia*, form the subjects of the two sections which follow.

The road and the conquered landscape

Pietro Janni (1984) has investigated the dependence of the geographical conceptions of the ancients on the idea of the itinerary. The Roman control of large areas of land entailed some conception of geographical space, and it is not surprising, therefore, that this control is intimately associated with the itinerary in its most developed form – the built road.

The prehistory of the long-distance Roman road is obscure; it has no obvious Greek antecedents, though the Royal Road of the Persians, a defining backbone for their domain, may be cited as a precursor. The Via Appia of 312 BC, linking Rome with its first substantial new area of involvement at a distance (Frederiksen 1984, 214-5), is the spectacular pioneer of the genre, though we should be careful about not retrojecting the solidity or magnificence of the developed road architecture of the imperial period or the various extensions of the practice which may be dated during the next century (Wiseman 1970).¹² The Via Flaminia and the Via Appia, if not quite unique in the simple fact of their existence as named roads, were alone in the imaginative panache and audacious scale involved in linking Rome with an important settlement days' journey away. Even if they were only systematized tracks, with some grand sections and fords, the *mentalité* which they reveal is one of informed confidence and grand ambition. Informed confidence: but the making permanent and making Roman of the itinerary is itself a way of ensuring the permanence of the information which is power. 'Rome to Capua' and 'Rome to Ariminum' now become *Roman* geographical concepts. We are dealing with what Janni (1984) has called 'the conquest of the second dimension'.

The first Roman roads, unsurprisingly, radiate from Rome. The first not to do so is still, however, an extension of a radius; the Via Aemilia, the great highway which in 187 BC joined the head of the Via Flaminia at Ariminum with the two forty year old *coloniae* in the heart of Cisalpina (Chevallier 1983, 8). An Augustan restoration gives a possible glimpse of how this road was viewed, however, as an ingredient in a topography dominated by the river-routes; an inscription records the rebuilding of 2 BC as extending not from Ariminum to Placentia, but to the river Trebia (*CIL* XI 8103; for rivers as conceptual boundaries, cf. p. 22 below). A second Via Flaminia of 187 BC initiated, to the best of our knowledge, the long-lasting Roman strategy of boxing in the regions between radial roads; crossing the Appennines to Bononia from Roman Etruria it symbolized the subjugation of the mountains which had thus been encircled with a

cordon of Roman control.¹³ M. Lepidus who built the Via Aemilia is commemorated also in the town of Rhegium Lepidi, some half way along its course. It is striking that he chose the name of the town which was thought of as the other extreme of Italy, but the nuance of the selection is not clear. In this foundation, in the novel strategy of the second Via Flaminia, and in the deliberately impressive straightness of the Via Aemilia (the first secure instance of this well-known geometric display) there are perhaps signs of innovation in the exhibition of power.¹⁴ But the underlying sense of geography remains that of the third century; these are still the Romans for whom the world is so parochial that the Adriatic is the Upper and the Tyrrhenian the Lower Sea (attested in Plautus *Menaechmi* and in a context of 178 BC by Livy 41, 1, 3). But a further change is visible during the second quarter of the second century.

The roads hitherto had been essentially radii from Rome, Roman Cisalpina a protrusion of Roman influence linked with Rome umbilically. While the umbilical metaphor always remains significant, in this period there is a decisively novel change. It seems that there is another change in the geographical outlook of the Roman élite, one which can be fitted into other such developments, as we shall see in the following section. The change involves viewing the world as a series of geometric spaces which can be crossed from one to another by journeys which fit them together into a coherent network. The journey, here as so often, precedes the road, and in 171 we see a pivotal moment when the consul C. Cassius Longinus sets off from Aquileia not just to fight the neighbouring peoples but with the spectacular aim of marching all the way to the other Roman sphere of concern in Macedonia (Livy 43, 1, 5-10). The plan is met with a revealing mixture of hostility and incredulity. It is, however, the beginning of a long tradition. As far as we can see, the moment when it is first crystallised in the road-network is the building of the Via Postumia in 148 BC, from Genua on the Tyrrhenian to Aquileia on the Adriatic Seas, a project the geographical significance of which comes out in the early milestone (*ILLRP* 52) describing the Genua-Cremona section (it is interesting to find Cremona stressed, as the hub of Roman Cisalpina, cf. Strabo 5, 1, 11). Postumius is consciously leaving his mark and Rome's on the the whole of northern Italy. The same idea is strikingly expressed later in the language of the trophy of Augustus commemorating the conquest of the Alps 'from the Upper Sea to the Lower' (Pliny *NH* III 136-7, cf. *CIL* V 7817).¹⁵

The geometric layout of the lands is measured, expressed and controlled by the celebration of the itineraries across them. The

formation of such axes becomes a familiar aspect of Roman attitudes to the empire, almost to the point of being a doctrine. It is these routes which give shape and definition to the world, so that by the second quarter of the first century BC Lucretius can compare them to the putative bounds of the universe itself; unlike the Roman World, he implies, in fact the infinite cosmos is not controlled by such a pattern of communications: 'the whole of existence is bounded by no zone of roads' (I, 958-9). Generals express their achievements in terms of distances traversed: so C. Sempronius Tuditanus in 129 BC expressed his conquest of Istria on the base of his statue at Aquileia with the simple phrase 'From Aquileia to the River Titius, one thousand stadia' (Pliny, *NH* 3, 129, cf. *ILLRP* 334-5). He thought in stadia (units of some 185 m), but the Romans were engaged in inventing the mile, or at least its systematic use (since numbered milestones go back, in very small quantities, to the early third century: *ILLRP* 448-9 (cf. Hirschfeld 1907)). By Polybius' time the distance from Apulia to Sena Gallica had been 'marked out in miles' (Strabo 6, 3, 10 = Polybius 34, 11, 8), and milestones were a conspicuous and relatively novel feature of C. Gracchus' spectacular Rome-centred overhaul of the Italian road-network (Plutarch, 28 something of a *locus classicus* for the complex *mentalités* behind Roman road-building). The welding together of existing routes into great highways in the provinces followed, the Via Egnatia across Macedonia being the most impressive case (Polybius seems to have commented on its length in miles, and to have terminated the reckoning at the great river Hebrus – Strabo 7, 5, 9); the Via Domitia through Narbonensis into Spain is a further example (Polybius 3, 39, 8, explaining in this context the Roman practice of road measurement in some detail).¹⁶ Such routeways came to define some of the commands of the late Republic, as has been shown for Cilicia, which was a geographical concept centred on the road from Asia through the Cilician and Syrian Gates to Antioch (Syme 1939).

It was at the emphatic mountain crossing of the Via Domitia in the Pyrenees that Pompey placed his trophy commemorating the conquest of 876 towns 'from the Alps to the outer edge of Spain' in 72 BC, a precursor of Augustus' Alpine monument quoted above. That recording his Eastern victories eleven years later took the genre to new extremes: he claimed the conquest of 1.2 million people (not areas, we note) 'from the Sea of Azov to the Red Sea'. The idea of conquest from sea to sea, which began at least with the Via Postumia, is developed (as Peter Wiseman has pointed out – 1987b) in the Augustan and imperial ideologies of the empire stretching from sunrise to sunset, that is (sometimes explicitly) from Ocean to

Ocean¹⁷. The monuments set up at the end of their *itiner*a by generals who reached (or crossed) Ocean reflect this (below p. 22). The generals of Augustus in particular made considerable efforts to join and unite areas of the outer world with *itiner*a between outstanding geographical pivots. These were, in the more successful instances, turned into properly built *viae*, like that which Agrippa had built from Narbonensis to the Ocean on the shore of the Channel (for the world view of the Augustan Age above all Nicolet 1988). The pattern of these *itiner*a lies behind the boundary routes of the early Empire like the Fosse Way and their more elaborate successors. Popular responses to the imperial messages embodied in these make their connexion clear; the long road itinerary, from Gades on the Ocean to Rome, and via the older Via Aemilia route, of the Vicarello goblets (Dilke 1985, 122-3) and the representation of Hadrian's Wall on the Rudge Cup are statements in the same language. These frontiers were of course called *limites*, and to interpret that term correctly we need to turn to a quite different aspect of Roman landscape control; although many points of contact between the aspects will become apparent.

Parcelling up the world.

A glimpse of how a roadless and mapless age might respond to the achievement of crossing the landscape with long-distance roads may be had from the lines of Chaucer quoted at the beginning of the paper. Other societies have used the notion of path or route for describing the Milky Way; it is striking to see the name of a great Roman road applied to the bar which splits the night sky.

In fact – and by coincidence – Roman religion also served to associate the layout of the sky with that of the land. The closest of connections bound the line of the augurs' sight and the measurements of the land surveyor and roadbuilder. Rome's earliest coherent street, the Sacred Way, coincides with the view from the augurs' observation post on the Capitol towards the distant Mons Albanus (Coarelli 1983, 97-118). The same technical terms refer to divisions of the space of ground and sky (Dilke 1971, 32-5, 86f.). Until recently such practices were either regarded as immemorial, because obscure, or imported, because exotic. Modern work on Roman religion has tended away from such responses, and is more inclined to accept continuous evolution and change in religious observances, in time with the dramatic changes which took place in Roman culture and society (North 1976). Instead of saying 'the Romans in the late Republic, turning to serious land-surveying, naturally invested it with the rigmarole of an arcane and ancient religion', we should say 'Roman

religion responded to the changing view of the world made possible through the opportunity of dividing up space in new ways, and grew with the new cultural forms to produce a coherent system'.

There is a fairly obvious connexion between the visual impression of a region traversed by a line of sight, as discussed above (p. 9), and the extension of such a line as a marked route on the ground to prolong the region defined beyond the limits of vision, and that link has its place, as in the case of the Sacred Way, in the religious system. But lines of sight across the sky also define areas by bounding them, and that too had its correlate on earth in Roman thought. The division of the land into a regular chequerboard of squares by routes parallel and perpendicular to a main axis was again both a feature of administrative practice and an aspect of the religious system. Its effect on the landscape is the system of land-division which we know as centuriation.¹⁸

It is now possible to make use of the close association of centuriation with religion not, as previous generations did, to argue that it suggests an immemorially ancient origin for this sort of land division, or that it derived from the practice of the Etruscans, but to reason that it reflects the preoccupations and *mentalités*, if not of a much wider segment of the *populus Romanus*, at least of the inner circle of the Roman élite; that it is intimately connected with the structures of power and with the whole range of ways in which those who managed the Roman state conceived of their *imperium* in the world.¹⁹ Some rules of property must go back to the earliest society of Rome; they are irrecoverable, but no doubt are the usual casual, haphazard net of responses to complex needs, fluid, flexible and adaptable. This is not at all what centuriation is like. Centuriation represents a radical and essentially political attitude to landscape and its use; this and its close links with power are reflected in its place in the religious framework of the state. The nature of the ideology concerned needs further examination.

The period of origins is not at all clear; some steps may have been taken during the fifth and early fourth centuries when Rome formed new rural units (the second-generation *tribus*), set up the early *coloniae* and made various intricate arrangements with some of her neighbours.²⁰ But by the end of the fourth century the dividing up of the part of the fertile plain of north Campania known as the Ager Falemus suggests that the Romans were prepared to use an approach to whole landscapes which has affinities with the practice of some of the Greek cities of southern Italy (the best known is Metapontum). In the Ager Falemus it seems that the early arrangements were rapidly

replaced by the different system which became standard, using exact squares instead of elongated rectangles, and emphasizing central axes at the expense of others (Vallat 1983). It seems natural to associate in some way this revolutionary step with the construction in 312 of Rome's first great long-distance road through the heart of the area (compare the use of the new system at Tarracina, also on the Via Appia). The division of Sabinum after 290, where no such road was certainly involved, seems to have been more like the older, more Hellenic, precedents (for other early systems, Castagnoli 1985b). We observe M. Curius Dentatus the conqueror of this territory making interesting play with the fact that he had conquered inhabitants *and* taken their land (*vir. ill.* 33, 1-3); he was also the author of a spectacular landscape-changing drainage project (Cicero, *Att.* 4, 15, 5) and, like Ap. Claudius, the builder of a great aqueduct (Frontinus *Aq.* 1, 6; *vir. ill.* 33, 9).²¹ Note the connexion between Flaminius' road and his plan to redistribute the *ager Gallicus* (Eckstein 1987, 10-12; Chevallier 1983, 7). Centuriation and highway-planning are, as we shall see, intimately linked (Clavel-Lévêque 1987, 14).

We may pass over the obscure history of centuriation proper until the period when it is triumphantly and massively applied to Cisalpine Gaul, in the wake of the Gallic War of 225-2 and of the further wars against Gaul and Ligurian at the start of the second century. The large *coloniae* of Cremona and Placentia (218) and their reinforcement (191) and the settlement of Aquileia (181) are the key dates: (though the chronology is very hard to fix – Chevallier 1983, 41): it is clear too that some centuriation along its route predates the construction of the Via Aemilia in 187.²² The end result is clear from the Map (Fig. 2.1); Cisalpine Gaul became a largely centuriated landscape. What can we say of why?

First, doing this to a landscape is a spectacular display of the conqueror's power. Although some environments are more tractable than others for centuriation, the amenability of the terrain does not determine this response (thus Gabba 1983 against Hinrichs 1967). Much more important is the wish to punish and repress. The major instances of centuriation are a catalogue of Rome's discomfitures: Campania, Cisalpine Gaul, Carthage's territory, the lower valley of the Rhone.²³ While there were no doubt other factors at work – the reduplication and consolidation through repetition of the Roman social and political system is one that has been rightly stressed (Gabba 1983b; Frederiksen 1976) – this was among the most significant.

The display of power worked at various levels. We have already discussed how such divisions conceptually integrate and enclose

whole regions. They impose a Roman set of measures and units of division (Vallat 1983b). They are also associated with an impressive infrastructure, the roads themselves, fords, causeways, bridges, cuttings, dykes and so on, which change the face of nature: such modifications were the sign of kingly power which could be thought to trespass on the sphere of the divine (Purcell 1987a); compare the description of C. Gracchus' roadbuilding at Plutarch *Gr.* 28. The foundation of *coloniae* and the building of arterial roads went hand in hand; we see that clearly in the middle Republic in Cisalpine, and it is still visible in the provinces in the imperial period. The Via Sebaste and Augustus' colonial foundations in Pisidia are a case in point (French 1980, 707). Centuriation also presupposes a social and economic system. The former inhabitants remain, demoted, humiliated and dependent (Gabba 1983a and b; Chevallier 1983, 75-7). The new units impose Roman legal practice, to maintain communications and access from the *limites* into the centre of the *centuriae* (Capogrossi Colognesi 1983). A new labour-intensive economy depends on these communications and on the newly oppressed work-force of the former inhabitants; its purpose is to provide the new local Roman central place with what it needs, and beyond that to contribute to the well being of Roman consumption in general. But behind it all the motive force is not simple braggart grandiloquence. The aim is the maintenance of a dynamic of growing power (not unlike the motive force in the empires of the Fertile Crescent in the first half of the first millennium BC: collect and deploy in order that you can go on collecting and deploying; if it works, your power grows) through the accumulation of available resources. This is not just some abstract greed (for the need to produce a more subtle model than crude 'greedy' exploitation, Millett, below [Chapter 4](#)). The resources clearly include the natural wealth of the region, both physical and as collected by its earlier inhabitants, but also the inhabitants and their descendants, the human resource of manpower.²⁴ While the inferiority of the conquered can not be doubted, it nonetheless is of a kind which presupposes their future inclusion, or that of their posterity.

Cisalpine Gaul illustrates these points well; it is indeed the case-study on which some of them were based. Emilio Gabba has explored the retention and future role of the previous populations (1983a and b). The control of populations was visible from the start, in the obliteration of the social system of the Boii, in the forcible removal of the Ligurians, in the banning of the new Gallic settlers near Aquileia, in the whole policy of *attributio* which ran on into the first century AD.

The pattern of incorporation is beyond our scope here; the remarkable *structure*, running from the fifth century BC to the third AD, of the gradual and measured differential inclusion of fighting men and their élite officers into the Roman system is quite well understood, and need only be mentioned here as a concomitant of the other long-lived *mentalités* and behaviour-patterns which this article does discuss.²⁵ For the other side of exploitation of resources, the best example of the importance of already accumulated wealth is from Transalpine Gaul, the treasure of Tolosa (Strabo 4, 1, 13; Dio fr. 90); but we notice that the Romans were impressed by the loot of gold and silver in Nasica's triumph of 191 BC (Livy 36, 40), and the gold-mines of Cisalpina were already producing for Rome by 143, during the most creative period of Roman organization in the region (Pliny *NH* 3, 138; 33, 78).²⁶ Polybius' account of the gold-mines near Aquileia, quoted by Strabo (4, 6, 12) reminds us of how close was the link between mineral wealth and accumulated treasure. In this sense the alleged effect on gold prices throughout Italy (they fell by a third) of the exploitation of the source is of particular interest.

In agriculture, the emphasis we would expect on the move along the spectrum that leads towards the cash-crop away from subsistence is to be found prominently in the mid-second century account of Polybius (*H* 17, 11-12). While he allows that the land has great virtue of its own, the particular merits he describes are not those of a part of the world enjoying a primordial Edenlike abundance. They are the product of good management and recent change which has given local agriculture new standards – wheat prices are low, other prices are fixed and a great variety of important crops is produced with success so that the surplus may be distributed throughout Italy.²⁷ These are the intended virtues of the centuriated landscape, in which every settler is meant to have the opportunity of being part of the new intensification of agriculture, assisted by the labour of former owners or of the more readily available slave, or by less successful neighbours. The *colonus* is not intended to be a 'peasant', but a progressive farmer, like the former master of the freedmen praised by the epitaph of Forum Livii (*CIL* XI 600), who show *pietas* and *fides*, feed themselves and look after any thing that is theirs – in the interests of their patron, a former military tribune. The stone must be more or less Augustan in date, from the period when Strabo, perhaps echoing Poseidonius, gives an expanded but similar narration of the prosperity of Cisalpina (5, 4-12). Not that we should see Cisalpina as of a wholly different quality from that of other centuriated parts of Italy (*pace* Gabba 1983, 24, who sees the exploitation of the area as a

breakthrough from the impoverished south); the system had been evolved in superproductive Campania, where the boundary walls, *maceriae*, which lined the *limites*, gave the agriculture the air of market-gardening, so intensive was it (Pagano 1983, 226).²⁸

In Cisalpina many of the *limites* were bordered by *fossae*, which helped improve production as needed through both drainage and irrigation. They were part of the hydraulic control of the environment which formed a large part of its impressiveness as 'man-made landscape', and like the roads, both local and arterial, they assisted the new economy by helping communications, at least in the larger cases. Pliny emphasizes the role of the *fossae et flumina*, and Strabo by chance gives the detail of one such project (5, 1, 11): the control of Trebia and Po above Parma. He explicitly stresses both communications and agriculture. This scheme was no doubt one among many. Place names and casual allusions tell us of a Fossa Clodia, and the early Empire added a Fossa Augusta and Fossa Flavia (Chevallier 1980, 88-94; Bosio 1967). A recent study has played down the economic importance of the waterways of Cisalpina (Harris 1989). If this is right, then it is on the role of rivers in communications and in the symbolic landscape that the explanation of their prominence in Polybius, Strabo and Pliny must fall. Hence, for the coastal zone, cults like that of Neptunus Augustus at Hadria (Buchi 1984, 70-7).

We should conclude this section by putting all these Cisalpine examples into their historical context. The Romans were much preoccupied with the ideology of centuriation during the first half of the second century. The probable division of the whole Ager Campanus in 165 was the most spectacular case: a large centuriation was laid out, aligned almost exactly on the points of the compass, a real consummation of agrimensorial art (the recently discovered centuriation of the Pomptine marshes (Cancellieri 1985) shows a similarly doctrinaire lack of topographical concern and may belong to the same context: here the parallel with Cisalpina is maintained through the great drainage schemes of M. Cornelius Cethegus (Livy *Per.* 46) which may be linked with this division. The whole was recorded on a plan – a notable piece of intellectual history, as it is one of the first on record at Rome, which was displayed in the Hall of Freedom at Rome where the censors' headquarters was (Granius Licinianus 9-10). The choice of location helps insert the division in the whole range of steps for maximising public revenue in which the magistrates, and especially the censors, became involved over the period: the receipt of the gains from the new management of Italy. The whole pattern was part of the articulation of Roman power,

growing as it was from decade to decade, which brings us round again to the natural associations such attitudes had with the state religion. Livy quotes a pair of highly revealing instances of the way in which the Romans were forming new notions of space (cf. Janni 1984, 130-4). In 181 the seas off Italy were divided into two commands, and we are lucky enough to hear how the matter was conceptualized. These two fragments of the *imperium* were held to be separated by a notional line bisecting the Sorrentine peninsula. The word for the line comes, hardly surprisingly, but very gratifyingly, straight from the thought world of the augur and the *agrimensor*: it is *cardo* (40, 18). In 178 naval operations in the Adriatic likewise made Ancona the *cardo* of their sphere of reference (41, 1, 3).

Not that all this ideology was the uncontroversial *communis opinio* of the Roman upper class. We should not, however, be seeking to identify a few major packages of policy and preference among the *primores viri*, and still less to attribute any such coherent value-systems to particular political groupings. The history of the period has been bedevilled by this: political historians who have only glimpses of the ideas approved by politicians have been forced to make those ideas the whole foundation of their analysis of political dissension, or give up. But opponents agreed and allies differed over the most fundamental ideological questions, and the historian must be content with sketching networks of ideas that belong in proximity to each other, without having the pleasure of attributing them as wholes to groups, let alone to individuals. Aspects of the centuriation ideology can be associated with both the elder Cato and the Gracchi, but to assert that is not to make them politically like-minded! The problem is, of course, similar with the related question of 'imperial policy', where differing responses to the needs of empire fit into value-systems which can not easily be mapped on to the everyday discourse of Roman politics.

The triumph of the ideology of centuriation in the early second century should be linked, for reasons which should now be clear, with the changing attitude to the idea of geographical space in Italy and beyond it, which lies behind the revolutionary expansion of the long-distance road-system towards the middle of the century. The small example of the maritime commands illustrates the application of the thought-world to the widening horizons of Roman power in the Mediterranean. The combination of imperial history and world geography in the writing of Polybius, a Greek intellectual brought to Rome as a result of the process of imperial growth, is vitally important: and it is in Polybius that we find the noteworthy

prominence of Cisalpina in his account of the Gallic War in Book II.²⁹ Still more revealing is the work of the elder Cato, known for his public opposition to Greek cultural influence, but responding in truth to the new intellectual climate which owed much to the world outside Italy. His pioneering attempts to give Rome an indigenous intellectual literature included the famous treatise on agriculture, the agriculture of intensified cash-crop production. He also produced the historical work *Origines*, in which he attempted to account for the past and present of the communities of Italy, Roman and non-Roman. The work reflected a conception of the unity of the whole peninsula, an idea of the land of Italy, bounded by the Alps; and included the whole of Cisalpina at some length.³⁰ Here too the overlap of the affairs of Italy with the affairs of the empire was apparent, it seems: Cato reflected on the annihilation of the 112 subdivisions of the Boii (Pliny *NH* III, 116), an episode far from irrelevant to Rome's decisions fifty years later (though we cannot tell if his view was more Calgacus' on the subjugation of Britain in Tacitus or the 'I have forbidden the Nasamones to exist' of Suetonius' Domitian). Finally, this is the age of the addition of exact topographical recording of landscape to the wider conceptions of geography – represented by cadastral mapping of centuriation (Dilke 1971, 316), which added the detail to the conceptual *mainmise* on the landscape already represented on the larger scale by the Roman long-distance road.

There are more concrete aspects of the value system too. We have suggested that it stands for a productive, flexible, intensificatory agriculture, and how that can be linked with the management of Italy for the benefit of the *populus Romanus* apparent in the new *vectigalia* and the other censorial initiatives of the time. It is indeed the agriculture of Cato; for centuriation entails the recapitulation of a social order which produces farmers on the Catonian scale alongside the infrastructure of the smaller *coloni*. It is an agriculture which is in many ways the antithesis of Ti. Gracchus' awful vision on the road to Numantia, hostile to the accumulation of huge conglomerations of land, intensive rather than extensive, demanding the care, skill and attention of the farmer. It is a system of production which can help provide the wherewithal, in various senses, for the life of the growing *plebs urbana*, a system characteristic of an Italy centred on Rome, as was emphasized and indeed fostered by the road-building programme of C. Gracchus.³¹ But one of its best expressions survives by accident. The man, unfortunately anonymous, who built the great road from Capua to Rhegium on the Strait of Messina – a geographically-conceived point-to-point project if ever there was one – in the later

second century, records on the inscription from Polla in Lucania (*ILLRP* 454) that, in addition to the construction of the road with all its monumental structures, and as part of the same scheme, he ensured (where he could, on public land) that pastoralists should make way for arable cultivators. The simple phrase stands for a whole way of thought.

From Republic to Empire

The sources are barely able to sustain our narrative over the period from the decisive developments in Roman policy which produced a kind of ‘constructive imperialism’ where before there had been only -merited or unmerited – fear, to the full Italianization achieved by the early Empire. On the institutional level there is a continuous modification of the rights and statuses of local communities in both Cisalpina and Transalpina. There were still campaigns, like those of Crassus in the 90’s, which had as their offshoots new urban foundations (in this case Forum Licinii in the foothills of the Alps, Poggiani Keller 1986). A Roman magistrate might be called upon to solve boundary disputes (as between Ateste and Vicetia in 136 BC, *ILLRP* 477) or to rule on the management of the resources of the environment (as with the summer pastures of the Appennines above Genoa in the famous *Sententia Minuciorum* of 117 BC, *ILLRP* 517). Many of the settlements in this region called *Fora* owe more to the encouragement by prominent Romans, whether magistrates or not, of local economic centres, than they do to major institutional strategies (Brunt 1971, appendix 12). The rights of the indigenous ethnic units against the newer communities became clearer, and out of the consciousness of ethnicities of authors such as Cato there gradually came a general practice for the management of such social entities which, by the time it was applied in Gallia Comata and beyond, had become the policy which is often referred to as ‘cantonal’. The division of the large mountain and hill territory of Appennine Velleia into equipollent *pagi* named after local toponyms or Roman deities, though undatable, clearly belongs in this context (Frederiksen 1976, 346-8). No overall policy or plan need be postulated here, but the gradual production of zones, great or small, of institutional homogeneity, was to be a vital precedent for the wide upgrading of city-statuses in Caesar’s Baetica, and the management of large tracts of the Julio-Claudian provinces. In fact the most sweeping changes were damaging, the confiscations and redistributions of the Second Triumvirate, which provoked the famous reactions of Virgil’s *Eclogues*

I and X. But here Rome's rulers were applying the ancient techniques of centuriation and landscape-formation to a region which was already in important ways culturally homogeneous with their own world.³²

This social development is still more difficult to trace, and is bedevilled by a polar viewpoint which sees only the stand-off between metropolitan Romans and stereotyped Gauls. The material culture of Roman settlers in the late third and early second centuries was consciously different from that of the local peoples, and the famous terracotta reliefs of Civita Alba suggest that it had a hostile orientation towards them (Eckstein 1987, 67 and 157). But the culture in question was not unique to Rome – it was rather that of the Hellenizing and prosperous city life of the whole of the central part of the peninsula. By the time that the age of Cicero is drawing to an end that culture is largely a phenomenon of the past, and is no longer an identifier of ruler or ruled. The reactions of the local inhabitants to it (Tizzoni 1981) reflect an indirect emulation – in the acquisition of the epigraphic habit but in local forms, or of the increased use of coinage, but not necessarily Roman. The cultural boundaries were fluid, diverse and complex.

Tracing them is another matter. The researcher familiar with the recent exponential growth in archaeological material from peninsular Italy or the north-west provinces must remember that the synthesis of the Cisalpine material is still somewhat less advanced (Rossignani 1981, 22f). 'Gallic' artefacts scarcely prove separate residual Gallic existence, as recent work has vigorously argued (Luraschi 1980). The simpler antagonistic models have given way to the notion of assimilation, or better, to the idea that a continuum of society and culture came to unite the various peoples of the region, for all that particular localities could retain distinctive characteristics of their own. The integrative process was subtle, working through the institutional forms which we have been considering, tying the descendants of the native population into the more and more refined Roman institutional framework, like the *vernae* of Vicetia in the epigraphic record, whom Gabba (14), surely rightly, sees as this sort of subordinate group.³³ What the conquered had to offer, in the short or long run, was themselves as a demographic resource for Rome's further wars, and it was clearly preferable for a slow amelioration of status in return for service to integrate Gaul with Italian over the generations than for the victorious Romans to maintain a kind of apartheid by military might. Thus in the words of a recent author 'Cisalpine Gaul became the first province to be populated entirely with

Roman citizens'.³⁴

So the coercion which brought about the subjugation of Cisalpina, after the initial battles, is located not, in the way in which it would be in other conqueror-states, in garrisoning and military repression, but in the instrumentation of the policies examined in the earlier sections, which entail the subordination of the natives as the conquerors organize the landscape in accordance with their geographical preconceptions. Very simply, the Roman perception of the place to be conquered and the process of conquest are so closely related as to be aspects of the same *mentalité*, and there is no need to disjoin them or seek more elaborate explanation.

The geographical particularities of Cisalpina, as perceived by the Romans, are intimately related to the history of its inclusion in the Roman world, and remain a potent ingredient in the formation of its later culture. It had the good or bad fortune to be what Auden called a 'definite place', with the strongest personal identity, an instantly recognizable physiognomy in its remarkable fertility, its encircling mountains, the extraordinary net of waterways, river, lake and coastal wetland.³⁵ The geographical perceptions which had moulded the region's history were not simple notions of bald topography, but a response to landscape, and the emphatic presence of the landscape in the cultural life of the élites of Roman Cisalpina is the consequence. Catullus' Sirmio (Wiseman 1987) and the landscape of the Eclogues, the *villegiatura* of the lakes in the younger Pliny or of the Altinate shore in Martial are part of the same interaction which was visible even in the early days of the Roman presence in the Po valley.

This phenomenon is the more noticeable since it was not created equally in other places, even where a striking landscape and a remarkable history combined with a local prosperity – there is no literature of the Alban Hills. Campania, however, does offer a striking parallel. Here too the intricate process of accommodation with Rome had taken the form of a long evolution of landscape forms, in a place of the most unusual physical characteristics; and the end of the process was a still more particular social and cultural milieu, Rome's rulers understood how to make use of such settings, as is hardly surprising since their forebears had done much to form them. So the unstable, fissured rocks of the volcanic craters provided the idea and location for Agrippa's spectacular tunnels; so, to take a more extreme example, the Gulf of Baiae provided the backdrop for the overwrought displays of the emperor Gaius.³⁶ The parallel occasion in Cisalpina is the little-known spectacle provided by the emperor Claudius when, returning victorious from the geographical triumph of the subjugation

of Britain, staying in Ravenna, he staged a ceremonial entry into the mouth of the Po in a monstrous floating palace (Pliny *NH* 3, 16, 120, cf. Poggiani Keller 1986, 119-120). The conqueror of land and sea was celebrating his mastery of both in the ideal place, where they were strangely intertwined and where the river which defined the whole region debouched.

The triumphal procession from Britain which thus made its entry into Ravenna was no doubt commemorated like the actual triumph at Rome itself by some sort of a *monumentum*. The *iter* of the journey itself is a monument of a kind; the connexion between the road and the journey along it is an obvious one. Three such physical memorials may be cited in this case: the Porta Aurea, much of which still survives at Ravenna (Tosi 1986, 466-8); the great lighthouse which Claudius gave the city (*NH* 36, 83); and the road, the Via Claudia Augusta, which joined this region to the Danube across the Alps (Venturi 1985, 273). The associations of each make it a strong contender to be associated with Claudius' *reditus* (formal return from war) through the city (Walser 1980, 438-26). Arches and gates, traditionally associated with the triumphal procession at Rome, mark several cases of the end of the length of a great road traversed by a returning general, or generally symbolic of the power of Rome: they are particularly found where they can also be a seamark, and embellish a transshipment like that of Claudius. Trajan's arch at Ancona and the possible *quadrifrons* at Richborough come to mind. More purely land-oriented is the terminal arch of the Via Flaminia at Ariminum, commemorating Augustus' refounding of the road.³⁷ Other upstanding objects could serve, like the terminal markers of the Via Appia at Brundisium, or the *statua* which concluded the Via Annia at the Straits of Messina (above p. 20); or altars, like those on the farthest coast of Spain (Syme 1969) or Drusus' on the Albis (Potter 1987) or lighthouses, the best of both worlds, with perpetual fire and lofty height. The lighthouses at Corunna, Dover and Boulogne are clear examples of the lighthouse as route-end monument.³⁸ The Via Claudia Augusta commemorates the journey of Claudius' father Drusus across the Alps, and it seems extremely likely that it represents the actual route, adopted out of *pietas*, of Claudius' British return. The milestones place it in precisely the context which we have been examining: 'from Altinum to the Danube' and, better, 'from the Po to the Danube',³⁹ that is 'from the second river of Europe to the greatest' (cf. p. 9 above). The emperor's achievement is described in the language of geometric geography as we saw it deployed in the second

century BC; and the achievement itself takes the form of a response to the world of nature, a dialogue with the landscape in the language of power.

All this should perhaps make us a little cautious of using the language of administrative policy or practical utilitarianism in our discussion of Roman imperialism. We have seen the place of rivers in defining the landscape of Cisalpina, as boundaries and as foci and as characteristic wonders. That should remain in our minds as we think of the nature of the Danube frontier or ask what role Augustus intended for the Elbe. It is a poet of that age who glosses '*res componere gestas, terrarumque situs et flumina dicere*' (Horace *Ep.* II, 1, 25lf. 'piecing together the narrative of history, stating the lie of the land and position of the rivers'). Traianus at Antioch and the whole tradition of ostentatious waterworks going back to Herodotus may be closer to what the Romans actually thought about the landscapes of the fringes of the developed empire than analyses of their defence strategies in peripheral regions. No doubt there were jumps in scale between Appius Claudius Caecus' road and the great 'geographical' roads of the second century, and between them and Pompey's claim to have subdued the whole East from the Sea of Azov to the Red Sea, and between that grandiloquence and the actual formation of a *limes* from Trebizond to Aqaba: but there is also much that is common to all the stages. And the display of the power of the conqueror to grasp the landscape, human and physical, and change it, is what is essential to Roman imperialism; not greed, or a nebulous expansionism, or an imperial mission, least of all that of cultural Romanization. Manlius Vulso crossed the Po in 218 BC and Claudius Caesar the River of Ocean in AD 43; in both the environments thus reached their successors won renown by 'creating the semblance of what Nature had denied.' And Agricola's famous baths and schools in remote Britain are as far from a mission to Romanize the unacculturated barbarian as Traianus' canal or the centuriation of Placentia.⁴⁰

Notes:

1 I should like to thank the audience and organizers of the Conference at the University of Kent for their remarks about the first version of this paper. Its scope is deliberately broad, and I have tried to keep documentation to a minimum; many of the subjects touched upon are the subject of vigorous debate, and this sketch of a personal view can of course not do them full justice. The comments of the editors and of Andrew Lintott, Fergus Millar and Peter Wiseman have also been of very great help.

2 By coincidence, a second inscription from Antioch shows another canal on the Orontes built under Traianus, this time with *corvée* labour from the city:

the *dioryx gnaphikos*, or Fullers' Canal. We may perhaps assume other projects with regard to the subjugation of the river which are as yet unattested (Van Berchem 1985; Feissel 1985). The status of the Orontes as a 'wonder of Nature' (Strabo 16, 2, 7) should be taken into account; for the control of natural waterways as a sign of the true ruler Strabo 16, 1, 9-11; Purcell 1987a, 192-3; cf. also note 12 below.

3 For these building-projects and their nuance, Purcell 1987a.

4 Lintott 1981 is an excellent example of what can be achieved – in this case with the institutional terminology of *imperium* and *provincia*.

5 The underlying ideas of what follows come from modern work on the cognitive aspects of human attitudes to space: see in particular Downs and Stea 1973 and 1977; for the ancient world Janni 1984.

6 For pre-Roman Cisalpine also Tizzoni 1981.

7 The geometric conceptions should be clearly distinguished from itineraries, another category which was gaining sophistication during the fourth century (Janni 1984, on Scylax and Sherk 1974 on the influence of Alexander's journeys). This mode of thought may not be irrelevant to the fourth century genesis of the Via Appia. For geometric approaches to the geography of Cisalpine Gaul, Strabo 5, 1, 2.

8 The consul of 268 was the second of his family with the eloquent Greek cognomen *Sophus*: he dedicated a temple to Tellus, the Earth, in which, at least two centuries later, there were Greek-style maps of Italy (Varro RR 1, 2, 1). These have been taken as mid third century (Wiseman 1986, cf. Dilke 1985, 39), and at the very least show a thematic link between the notion of Tellus and Italian geography. If we understood its circumstances and date better, the establishment of the *colonia* at Saena Gallica about 290 BC might be fitted better into this scheme; see Eckstein 1987, 5, n.6, with the suggestion that Gallic/Samnite cooperation might underlie any concertation of Roman response in north east and central Italy.

9 For a good account of the culture of the Gauls in Italy, the exhibition catalogue *I Galli in Italia* 1978.

10 Compare the language of 'civilized Romans versus the barbarians' in Toynbee 1965 II, 253 'a regression of civilization had preceded the Romans' own forward movement'...'it is unquestionable that the advent of the Gauls was a set-back for civilization in the Po basin'. But even Toynbee admits (256) that Cisalpine was 'far from being a savage wilderness infested...by a horde of savages'.

11 It is clear however that the region was not equally densely populated, and there were more open areas in the north-west (Negroni Catacchio 1978).

12 Road-building itself is of course much earlier, and quite elaborate; for Etruscan roads in S. Etruria, Potter 1979 fig. 21 and pp. 79-83, a clear contrast to the network established in the second century. The ancient Via Latina, the earliest routeway between Rome and Campania, should be regarded as a concatenation of these local tracks. It would, however, be interesting to know at what date the Capua Gate of Rome was built and named (the walls are fourth century but not precisely dated, and there may have been an earlier similar enceinte (Coarelli 1982). The development of the district around the gate seems to coincide however with the building of the Via Appia (Purcell 1987b). Note also how the first aqueducts, the Aquae Appia and Anio Vetus (cf. p. 16 above with n.22) date to the same period.

13 For these roads Wiseman 1970 (1987), Chevallier (1983) 8. Note also a further Via Aemilia of 175 tying Aquileia in on another radius.

14 A characteristic which has long been the most obvious feature of many Roman road systems. But we perhaps too often attribute straightness to the pursuit of efficiency, which it does not in fact usually serve, any more than it does economy. Breathtaking geometry and ruthless shaping of nature are the only explanations, in the pursuit of the display of power. This underlies the 'aesthetic' appreciation of Plutarch for Gaius Gracchus' work: cf. n.31. The association of R(h)egium with the homonymous Greek city seems more plausible than the reasons for reading it as 'Royal' (settlement): Ewins 1952; Brunt 1971, 574.

15 'Network roads': the Viae Annia (153) and Popillia (132) replaced waterborne communications along the Venetian litoral (the account of Wiseman 1964 should be accepted), and the Via Aemilia Scauri of 107 improved communications in the Ligurian area. Problems remained at that end of the Postumia; it remained far easier to approach Cisalpina from Rome via the Aemilia (Wiseman 1970, 134: note also the itinerary of the Vicarello goblets, Dilke 1985, 122) and the Genua end of the Postumia should be seen as a grand geographical claim rather than as a route of great utility, for the first forty years of its existence at any rate. Hence the implausibility of Toynbee's view (1966, II, 284) that the Postumia was a '*chemin de ronde*' inside a sub-Alpine frontier.

16 It is very likely that the Kings of Macedon had improved the route later taken by the Via Egnatia. For Roman road-building in a province recently created from a kingdom, compare M. Aquilius in Asia 129-6 BC (French 1980): *ILLRP* 455-6.

17 See Sallust, *Cat.* 36.4; cf. Cicero *ND* II, 164; Pliny *NH* II, 242; Ovid, *Pont.* I, 4, 29f. For Ocean to Ocean Plutard, *Crassus* 16, 2; Catullus 11, 3; Sallust *Hist.* I, 11, 17.

18 What follows must be once again a hasty survey of an increasingly technical subject. The best recent accounts of centuriation are in the catalogues *Misurare la terra*; especially the general volume *Centuriazione e coloni nel mondo romano*, 1983. Two further volumes describe cases in Cisalpine Gaul: *Il caso modenese*, 1983 for the centuriation of 183 BC in Mutina, and *Il caso mantovano*, 1984 for the centuriation of 281 BC in Cremona and the great division of the territory of Mantua in 40 BC which affected the ancestral property of the poet Virgil. On the whole subject the volume cited under Vallat 1983b is of particular importance. See also Chevallier 1983, 31-80.

19 Against the immemorial origins of centuriation, Gabba 1983a and b.

20 For early centuriations, postulated and/or attested, Castagnoli 1985a and b; 1981; Clavel-Lévêque 1987.

21 The correspondence would be complete if a road-building project of Dentatus in Sabinum can be deduced from the emendation via Curia in Dionysius of Halicarnassus I, 14.4.

22 Tacitus, *Hist.* III 34 on the colonization of Cremona, with an interesting logic: it is *precisely because (igitur)* it was intended as a bulwark for Rome in the region that it was populous, sited for communications and agricultural production, and (most importantly) *benefited from the closest contact and intermarriage with the indigenous peoples*. For the more positive aspects of the subordination of the native population to the new Roman system, see also the

discussion below p. 17. For the site of Aquileia, Fabbri 1979; Dyson 1985, 73-4, the senate's debate about the nature of the *colonia* and the site combine to suggest that the centuriation was the main *raison d'être* of the foundation: although the routes across the Alps and into Istria may have played some part at this stage, the strategic considerations are overemphasized by Dyson 1985, 73-4 (for the later ambitions of Longinus and Tuditanus, above p. 13-14).

23 See Clavel-Lévêque 1987.

24 Stressing the importance of Cisalpine manpower in the Second Punic War Eckstein 1987; for its rapid deployment Toynbee 1965, II, 272-3.

25 Rossignani 1981, 228 n.17 (recent finds at Cremona) for the architecture and decoration of the Roman settlements. Note also, on the political urbanization of the second century, Gabba 1976.

26 It is worth remembering that the growing tendency of the Roman state to exact dues of various kinds extracted gain from the redistribution of goods. We should not suggest that any of the attitudes and policies discussed in this paper had the objective of furthering trade as such. But the centuriation ideology and the surplus it involved naturally did no harm to existing patterns of redistribution, northwards from Aquileia, west through Genua, south-east down the Adriatic: and these effects were exploited (a *portorium Aquileiense* existed by 69 BC, Cicero *Font.* 1,2). See Bandelli 1985 for the Dalmatian coast and its rapid development as part of such networks during the first century BC; Panciera 1976 for the Alpine routes; Bandelli 1983 for the early phases of the economy of Aquileia.

27 For the productiveness of Gallic agriculture, see *I Galli in Italia*; Gabba 1983b, 42; Chevallier 1983, 232-49. It remains very uncertain how far the agriculture produced a surplus for redistribution elsewhere (Harris 1979). I am inclined to think that it did not on any significant scale, but the case cannot be proven.

28 Some justification is needed for this view of the agriculture of Cisalpine Gaul. The idea that the land-allotment system is capable of making use of the labour of the old owners, (for the repetition in *coloniae* of Roman social hierarchies, Gabba 1983 and Frederiksen 1976), the poorer settlers, and slaves, is developed from the treatments of Gabba 1976 and 1983. A contrast has been drawn between the local consumption of Cisalpina and the cash-crop 'plantation-agriculture' of the south (eg. De Neeve 1984, 92, 112). But if Gabba is right, the cash-crop producers of the south may have been able to lock in to a similar system, which accords with recent views of the complexity of Italian farming systems (eg. Spurr 1983); and the economic isolation of the north is not what Polybius implies, and goes against the evidence for the wine-trade (Tchemia 1986, 129-35, Baldacci III and Dressel 6 amphorae; 185, *spionia* grape). The plantation of the Sasemae, whose treatise was the second on agriculture in Latin, was at Dertona (Kolendo 1973). For older accounts of the subject Chilver 1941, 129-44; Brunt 1971, 172-84. On the agriculture of centuriation see also De Neeve 1984, 130-45; Keppie 1983.

29 For Polybius' researches with the help of Scipio Aemilianus, Pliny *NH* 5, 1, 9. On the development of these tendencies in the Augustan period, see now Nicolet 1988.

30 For Cato's intellectual setting Toynbee 1965, II ch. 15; Astin 1978, ch. 8.

31 The aesthetics of the straightness of Gaius' roads is emphasized by Plutarch, and that the distances were emphasized by the large-scale use of regular milestones (83); *CGr* 7). For the combination of road-building and allotments

note also the example of Flaminius (n. 13 above). For the Polla stone see Wiseman 1970 (1987), dating the project to 130-28 and attributing it to T. Annianus Rufus. The Gracchan moment is certainly appropriate for the interpretation favoured here: see also Hinrichs 1967.

32 Dyson 1985 is good on the cities of Transpadana, although he is inclined to blend second with first century experience. See also Poggiani Keller. The main foundations, with accompanying centuriation, are Dertona and Eporedia to the west. For the triumviral settlements Keppie 1983.

33 The excellent work of Giorgio Luraschi (1979; 1980) should be emphasized in this context.

34 The question of the enfranchisement of Cisalpina has long been extremely vexed (Ewins 1957; Millar 1977, 398-403; Luraschi 1980) and of course can not be covered in detail in this discussion.

35 Note the description of the coastal zone in Servius (ad Georg. I, 262) 'for the greater part of the Veneto is so rich in rivers that all exchange is carried out in boats; Ravenna and Altinum are typical – hunting, fowling and agriculture alike are practical for boats'. For the wetlands see Traina 1983 and 1988; for their natural wonder Strabo 5, 1, 5.

36 This line is developed to some extent in Ch. 14 of Frederiksen 1984. Note that the Agrippan tunnels are one of the few wonders indicated on the Peutinger Table, a possible descendant of Agrippa's world map: cf. Wiseman 1987b.

37 Ariminum, *ILS* 84, 'via Flaminia et reliqueis celeberrime Italiae vieis... munitis'. Note the Augustan *colonia* here; Keppie 1983, 187. Ancona; Lepper 1969, 256 (this piece discusses also Trajan's mid point arch for the Via Appia Traiana at Beneventum). For the Tiberian arch for Germanicus on Mt. Amanus as E. frontier of the Empire, Potter 1987. Note also the Ianus Augustus at Cordoba, centre of the road-system of Baetica, Smallwood 1967, 333. Note the imperial embarkation-point as a concept in Strabo (*naustathmos*), 4, 1, 9, cf. 4, 3, 3.

38 For such monuments (*horoi cheirocmetoi* Strabo 3, 5, 6 with a general discussion of their geographical significance) Syme 1969, the case of Spain: for lighthouses in particular Hutter 1978. See also the lighthouse of Caepio at the mouth of the Baetis, a significant location (Strabo 3, 1, 9); perhaps to be attributed to Q. Servilius Cn. f. Caepio who governed Further Spain in 140-39 BC, in which case the example would be interestingly early.

39 The milestones are respectively *CIL* V 8002 and *ILS* 208, Smallwood 1967, no. 328, Levick 1985 no. 98. See also Chevallier 1983, 11. For imperial *itineraria* cf. Millar 1982.

40 The quotation is Tacitus, *Ann.* XV 42. Purcell 1987a examines some of these reactions to the landscape in a domestic context.

References

- Astin, A. E. 1978 *Cato the Censor*, Oxford
- Bandelli, Gino 1983 'Per una storia della classe dirigente di Aquileia repubblicana', in *Les 'bourgeoisies' municipales italiennes aux IIe et Ier siècles av.J.C.*
- Bandelli, Gino 1985 'La presenza italica nell'Adriatico orientale in età repubblicana', in *Aquileia, la Dalmazia e l'Illirico*, 1985 (= *Antichità Altoadriatiche* XXVI), 59-84
- Bosio, Luciano 1967 'I problemi portuali della frangia lagunare veneta nell

- antichità', *Venetia* I, 11-96
- Brunt, P. A. 1963 review of Hans D. Meyer, *Die Aussenpolitik des Augustus und die augusteische Dichtung*, 1961, *J. Roman Stud.* 53, 170-6
- Brunt, P. A. 1963 *Italian Manpower*, Oxford
- Buchi, E. 1984 'I quattuorviri iure dicundo di Adria e il culto del dio Nettuno', *Epigraphica* 46, 65-89
- Buonopane, A. 1986 review of Traina 1983, *Riv. Fil.* 114, 224
- Calzolari, Mauro 1984 *Carta degli insediamenti di età romana nella, Bassa Modenese*, Modena
- Capogrossi Colognesi, Luigi 1983 'Le servitù di passaggio e l'organizzazione del territorio romano in età repubblica', in *Misurare la terra, centuriazione e coloni nel mondo romano. Città, agricoltura, commercio; materiali da Roma e dal suburbio* 1983, 28-32
- Castagnoli, Ferdinando 1983 'Resti di divisioni agrarie nel territorio del odierno Lazio', in *Misurare la terra...*, 38-40
- Castagnoli, Ferdinando 1985-6 'Sulle più antiche divisioni agrarie romane', *Atti Acc. Lincei* 39, 241-58
- Cancellieri, M. 1985 'Pianura pontina' in *Misurare la terra...*, 44-8
- Chevallier, R. 1959 'Rome et l'Italie du Nord', *REL* 37, 132-50
- Chevallier, R. 1980 *La romanisation de la Celtique du Po*, I, Paris
- Chevallier, R. 1983 *La romanisation de la Celtique du Po*, II, Paris
- Chilver, G. E. R. 1941 *Cisalpine Gaul*, Oxford
- Clavel-Lévêque, M. 1987 'Questions de méthode et approches comparatives: cadastres et histoire', in G. Chouquer et al. (eds.) *Structures agraires en Italie centro-méridionale*, Rome (= *Coll. Ec. Fr. Rome* 100), 3-57
- Coarelli, Filippo 1982 in I. Dondera and P. Pensabene (eds.) *Roma repubblicana fra il 509 e il 270 a.C.*, 22 Rome
- Coarelli, Filippo 1983 *Il Foro Romano, I, periodo arcaico*, Rome
- De Neeve, P. W. 1984 *Colonus: private farm-tenancy in Roman Italy during the Republic and Early Principate*, Amsterdam
- Dilke, O. A. W. 1971 *The Roman Land Surveyors*, Newton Abbot
- Dilke, O. A. W. 1974 'Archaeological and epigraphic evidence of Roman Land Surveys', *Aufstieg und Niedergang der Römischen Welt* II, I, 564-92
- Dilke, O. A. W. 1985 *Greek and Roman Maps*, London
- Downs, R. M. and Stea, D. 1973 *Image and Environment. Cognitive mapping and spatial behaviour*
- Downs, R. M. and Stea, D. 1977 *Maps in mind. Reflections on cognitive mapping*
- Dyson, S. L. 1985 *The Creation of the Roman Frontier*, Princeton
- Eckstein, A. M. 1987 *Senate and general; individual decision-making and Roman foreign relations* 264-194 BC, Berkeley
- Ewins, U. 1952 'The early colonization of Cisalpine Gaul', *Papers of the British School at Rome* 20, 54-70
- Fabbri, Paolo 1979 'L'aspetto fisico del territorio di Aquileia', in *Il territorio di Aquileia nel 'antichità'* (= *Antichita Altoadriatiche* XV)
- Feissel, D. 1985 'Deux listes de quartiers d'Antioche astraits au creusement d'un canal (73-4 ap. J.-C.)', *Syria* 62, 75-103
- Frederiksen, M. W. 1976 'Changes in the patterns of settlement' in P. Zanker (ed.), *Hellenismus in Mittelitalien*, Göttingen 341-55
- Frederiksen, M. W. 1984 *Campania* (ed. N. Purcell), London
- French, D. H. 1980 'The Roman Road System of Asia Minor', *Aufstieg und Niedergang der römischen Welt* II, 7, 2, 707-29

- Gamsey, P. and Saller, R. 1987 *The Roman Empire, Economy, Society and Culture*, London
- Gabba, Emilio 1976 in P. Zanker (ed.), *Hellenismus in Mittelitalien*, Gottingen
- Gabba, Emilio 1983a 'Per la storia della società romana tardo-repubblicana', *Opus* I, 373-87
- Gabba, Emilio 1983b 'Strutture sociali e politica romana in Italia nel Its. a.C.', in *Les 'bourgeoisies' municipales italiennes aux Ile et I siècles av. J.C.*, 41-5
- Grilli, Alberto 1979 'Il territorio di Aquileia nei geografi', in *Il territorio di Aquileia nell'antichità* (= *Antichità Altoadriatiche* XV)
- Harris, W. V. 1979 *War and Imperialism in Republican Rome*, Oxford
- Harris, W. V. (ed.) 1984 *The Imperialism of Mid-republican Rome*, Rome
- Harris, W.V. 1989 'Trade and the River Po: a problem in the economic history of the Roman Empire', in J.-F. Bergier (ed.) *Montagnes, fleures, forêts dans l'histoire: barrières ou lignes de convergence*, 123-33
- Hinrichs, Focke Tannen 1967 'Der römische Strassenbau zur Zeit der Gracchen', *Historia* 16, 162-76
- Hinrichs, Focke Tannen 1974 *Die Geschichte der gromatischen Institutionen*, Wiesbaden
- Hirschfeld, O. 1907 'Die römischen Meilensteine', *Kleine Schriften* (1913), XLIV
- Hoyos, B. 1976 'Roman strategy in the Cisalpina 224-22 and 203-191 BC' *Antichthon* 10, 44-55
- Hutter, S. 1978 'Der antike Leuchtturm von La Coruña', *Antike-Welt* 9, 2, 33-48
- I Galli in Italia* Exhibition Catalogue (ed.) Paola Santoro, 1979
- Janni, Pietro 1984 *La mappa e il periplo, cartografia antica e spazio odologico*, Rome
- Keppie, L. 1983 *Colonization and veteran settlement in Italy 47-14 BC*, London
- Kolendo, Jerzy 1973 *Le traité d'agronomie des Saserna*, (= *Archiwum Filologiczne* XXIX), Wroclaw
- Lepper, F. A. 1969, review of F. J. Hassel, *Der Trajansbogen in Benevent; ein Bauwerk des römischen Senates*, Mainz, 1966, *J. Roman Stud.* 59, 250-1
- Levick, Barbara M. 1985 *The government of the Roman Empire, a sourcebook*, London
- Lind, 1986 'The idea of the Republic and the foundations of Roman political liberty', in C. Deroux (ed.), *Studies in Latin literature and Roman history*, IV, 44-108, Brussels
- Lintott, A. 1981 'What was the imperium Romanum? *Greece and Rome* 28, 53-7
- Luraschi, Giorgio 1979 *Foedus, ius Latii, civitas*, Pavia
- Luraschi, Giorgio 1980 'La romanizzazione della Transpadana: questioni di metodo', *Studi in onore di Ferrante Rittatore Vonwiller*, II, Como, 207-17
- McDonald, A.H. 1974 'The Roman conquest of Cisalpine Gaul (201-191 BC)', *Antichthon* 8, 44-53
- Marcotte, D. 1987, review of Janni 1984, *Latomus* 46, 234
- Millar, F. G. B. 1977 *The Emperor in the Roman World*, London
- Millar, F. G. B. 1982 'Emperors, frontiers and foreign relations, 31 BC-AD 378', *Britannia* 13, 1-23
- Millar, F. G. B. 1984 'The political character of the classical Roman Republic, 200-151 BC', *J. Roman Stud.* 74, 1-19
- Negroni Catacchio, Nuccia 1978, in *I Galli in Italia*, 76-80
- Nicolet, Claude 1978 'L' "imperialisme" romain', C. Nicolet (ed.), *Rome et la conquête du monde Méditerranéen*, Paris 883-920
- Nicolet, Claude, 1988 *L'inventaire du monde: géographie et politique aux origines de l'Empire romain*, Paris
- North, J. A. 1976 'Conservatism and change in Roman religion' *Papers of the British*

- Pagano, Mario 1983 'Un nuovo termine della centuriazione dell' *ager Campanus*', in *Misurare la terra* 1983: *centuriazione e coloni nel mondo romano*, Modena, 231-4
- Panciera, Silvio 1976 'Strade e commerci tra Aquileia e le regione Alpine', *Antichità Altoadriatiche* IX, 153-72
- Peyre, C. 1979 *La Cisalpine Gauloise du IIIe au Ier siècle av. J.-C.* (= Etudes d'histoire et d'archéologie I), Paris
- Poggiani Keller, R. (ed.) 1986 *Bergamo dalle origini all'altomedioevo*, Modena
- Potter, D. S. 1987 'The *Tabula Siarensis*, Tiberius, the Senate, and the Eastern boundary of the Roman Empire, *ZPE* 69, 268-76
- Potter, T. W. 1979 *The Changing Landscape of South Etruria*, London
- Purcell, N. 1985 'The Arts of Government' J. Boardman, J. Griffin and O. Murray (eds.) *The Oxford History of the Classical World*, Oxford, Chapter 23
- Purcell, N. 1987a 'Town in country and country in town', (ed.) E. MacDougall, *The Roman Villa Garden*, Washington
- Purcell, N. 1987b 'Tomb and Suburb', (eds.) H. von Delsberg and P. Zanker, *Römische Gräberstrassen*, Munich
- Ridgway, D and F. R. (eds.) 1979 *Italy before the Romans*, London
- Rossignani, Maria Pia 1981 'Problemi aperti relativi all' età romana', (eds.) A. Piccoli and P. Gasperini *Primo convegno archeologico regionale, Museo archeologico Cavriana, Ati*, Brescia
- Salmon, E. T. 1970 *Roman Colonisation during the Republic*, London
- Salmon, E. T. 1981 *The Making of Roman Italy*, London
- Sherk, R. K. 1974 'Roman geographical exploration and military maps', *Aufstieg und Niedergang der römischen Welt* II, 1, 534-63
- Smallwood, E. M. (ed.) 1967 *Inscriptions illustrating the reigns of Gaius, Claudius and Nero*, Cambridge
- Spurr, S. 1983 *Arable Cultivation in Roman Italy*, London
- Susini, G. C 1965 'Aspects de la romanisation cispadane, chute et survivance des Celts, *CRAI*, 143-63
- Syme, R. 1939 'Observations on the province of Cilicia', in *Anatolian Studies presented to W. H. Buckler*, 239-332 (= *Roman Papers*, Oxford, 1979, no. 10)
- Syme, R. 1969 'A governor of Tarraconensis', *Epigr. Stud.* 8, 125-33 (= *Roman Papers*, Oxford, 1979, no. 54)
- Tagliaferri, Amelio 1986 *Coloni e legionari romani nel Friuli Celtico*, Pordenone
- Tchemia, A. 1986 *Le vin de l'Italie romaine*, Rome
- Tizzoni, M. 1981 'La seconda età del ferro', (eds.) A. Piccoli and P. Gasperini, *Primo convegno archeologico regionale Museo archeologico Cavriana, Atti*, Brescia, 211-24
- Tosi, G. 1986 'La porta Aurea di Ravenna e un disegno de Andrea Palladio', *R M* 93, 425-70
- Toynbee, A. 1966 *Hannibal's Legacy*, Oxford
- Traina, Giusto 1983 *Le Valle Grandi Veronesi in età romana*, Pisa
- Traina, Giusto 1988 *Paludi e bonifiche del mondo antico*, Rome
- Van Berchem, D. 1983 'Une inscription flavienne du Musée d'Antioche', *Museum Helveticum* 40, 186-96
- Van Berchem, D. 1985 'le port de Séleucie de Piérie et l'infrastructure logistigne des guerres parthiques', *Bonner Jahrbücher.* 185, 47-87
- Vallat, Jean Pierre 1983 'Studio di un catasto nell' *ager Falernus*', in *Misurare la terra...*, 227-30

- Vallat, Jean Pierre 1983b 'Ager publicus, colonie et territoire agraire en Campanie du nord a l'époque républicaine', (ed.) M. Clavel-Lévêque *Cadastrés et espace rurale, Table Ronde, Besançon*, Paris. 187-98
- Venturi, E. 1985 'La politica edilizia di Claudio a Rome e in Italia', *RStAnt.* 15, 257-77
- Walser, G. 1980 'Die Strassenbau-Tätigkeit von Kaiser Claudius', *Historia* 29, 438-62
- Wiseman, P. 1969 (1987) 'Viae Anniae again', *Papers of the British School at Rome* 37, 82-91 (= *Roman Papers*, Liverpool, 1987, 116-25)
- Wiseman, P. 1970 (1987) 'Roman Republican road-building' *Papers of the British School at Rome* 38, 122-52 (= *Roman Papers*, Liverpool, 1987, 126-56).
- Wiseman, P. 1986 'Monuments and the Roman annalists', (eds.) I. Moxon, J. Smart and T. Woodman, *Past perspectives, studies in Greek and Roman historical writing*, 87-100
- Wiseman, P. 1987b 'Julius Caesar and the Hereford World Map', *History Today*, November 1987, 53-7

3. Romanization: a point of view

by Richard Reece

The conference on Romanization tempted me to discuss the application of the theory of relativity to archaeology. The fact that I find it a temptation rather than an opportunity puts me firmly in the backward looking brigade at odds with those who are reacting against the evils, as they see them, of the classical, enlightenment, scientific method, of positivism and of fact-bound number-crunching. Yet I refuse to be classified with quite that ease. The conflict, I think, comes from the general failure, in both camps, to recognize the dual nature of archaeology, or perhaps better, the study of the past. There is the study of the litter that the past has left, and there is the attempt to say what the litter, once reduced to order, means. However devoted the interpreters they still arrange their data; they still dig stratigraphically, they still draw their pots, and they still measure the depth of their post-holes. To this extent I think they still rely on the old scientific method and they might even admit as much in the right company.

Disaster strikes when the old scientific method is applied to interpretation for it seems quite clear to many people, whether scientific or interpretative, that interpretation of materials from the past and understanding the past are not elements of the physical or biological sciences and therefore cannot share their methods. Analogies with ideas such as 'uncertainty' in atomic physics may well be useful as warnings of how to interpret, but I find them of little inspiration for the gathering and manipulation of material. Thus one group, when talking about interpretation, may rightly remember how physicists have been shown that at the sub-atomic level they must talk in probabilities rather than certainties. The material addict will point out that the flight of a bullet is better judged by Newton's Laws of Motion, if you want to avoid it, than by Heisenberg's Uncertainty Principle or Schroedinger's attempt at solving the wave equation.

If there is a message in all this it is to the effect that the limits of certainty or the degrees of certainty in any observation or

interpretation ought to be carefully examined and firmly understood and remembered. But to bring in the idea of relativity is to take a step deeper, for it tells us not simply that matters will look different from different points of view, but that ostensibly objective judgements made from different vantage points will be absolutely different. Thus time, and the measurement of time, will vary according to the circumstances of the measurer, however objective he may be.

When we come to the question of Romanization, or interaction between Roman and Native, then there is more to the problem than simply warning the observer that what to the Roman was an advance of civilization into the depths of Celtic depravity, and therefore not only good but self-evidently so, looked to the British or Belgae or the Gauls in general like self-seeking expansion with the sole motive of authoritarian greed. Once the process under discussion has been isolated and defined then it can be interpreted from any point of view in the knowledge of partiality, but this does not allow us to analyse what was happening, only to describe it. Thus the process of homogenization evident in the sequence of material culture in the first century BC and the first century AD in the area between the Mediterranean and the North Sea can be described accurately once the basic tenets of approach have been set out. There is an Italian material culture of, say, 300 BC whose most obvious attributes can be defined. By use of these attributes this set of material which makes up Roman material culture can be separated off from other similar cultures, Greek and Iberian, and this can be used to define Roman-ness. At the other end of the scale will be the material culture assemblage of Britain in 300 BC which will be substantially different though there will be a very small number of similarities with Rome. The process of Romanization can be monitored as traits from one cultural assemblage enter another and the result in AD 300 will be a cultural assemblage both in Rome and Britain which is more alike than were the assemblages of 300 BC, but perhaps with more differences between dates than between places. In other words not only will both ends have changed, but the mixture itself will have changed so that comparisons will only be valid when made geographically at roughly the same time rather than chronologically in the same area.

So I perservere with this old fashioned approach which will strike dismay into the hearts of forward-looking archaeologists who hoped that such material sterility had been left behind, not because I want to hurt them, but simply because I want some objective material observations, or facts, before I begin to try to interpret them. I have no illusions about the relevance of these 'facts' to the societies under

study. I agree completely when it is pointed out to me that the proportion of 'A' ware to 'B' ware, which I am using as an index of cultural homogeneity, was something which the society under study never knew about, never cared about, and would not have cared if it had known. I am interested in this proportion simply as a material fixed point against which interpretations can be evaluated. If the site in question is in Switzerland, and 'A' ware comes from Italy and 'B' ware from the Baltic, and the predominance swings from 80% 'B' ware in 100 BC to 80% 'A' ware in AD 100 any discussion of influence, routes, political influence and so on must at least be consonant with the 'fact'. My aim is to build up a supply of these facts so that we can test all the ideas produced on the process of Romanization or assimilation, or merely cultural homogenization, eliminate some and strengthen others. The two processes, of providing factual base-points, and producing interpretations, are very different; while I insist that material facts have to be assembled and tested by the methods of old-fashioned classical science, I see that these guide-lines are of little use in formulating ideas and interpretations, and I fully acknowledge that this second process is an interesting approach to making sense of the litter left from the past.

These first two steps seem to me fairly well defined and straightforward. We need a compilation of material to spark off ideas and to limit the number and scope of explanations so that we have some measure of our nearness to reality. Then we need to produce ideas in order to try to build consistent pictures of what we each think happened in the past and to inform new excavations and compilations of material with lines of reasoning and fruitful areas of material research. So far we are on the lines of traditional archaeology and ancient history; the point which I find difficult to grasp and therefore shall find difficult to put across is the problem of standing outside our chosen ethnic or political or religious viewpoint to try to see the events, material and ideas generated in some sort of overall pattern. Thus I want to get further away from the process of Romanization or whatever we call it than just to assimilate both the Roman and the native point of view. I also want to be able to look from the outside on to the whole Roman process to try to see whether, as most Ancient Historians would assume, the process that we are studying is the intentional movement of a conquering power into areas of previous resistance or barbarism, or whether the Roman machine is simply part of an overall process that can be identified which is being speeded up by the machine.

Part of what I think is a glimmer of light comes from the remarkable paper by Willy Groenman-van Waateringe (1980) in which she says something that can be interpreted as 'The Romans conquered the part of the North West that had already been predigested for them, but failed miserably in those parts that were not predigested for conquest'. I must emphasize that this is what I got out of it, not what she necessarily put into it; to those who agree the credit should be hers, to those who disagree the disfavour mine. A second ray of light comes in the process of assimilation between Roman and British, or Roman and Gaulish material culture that had been going on for several decades before the troops arrived to hasten the process. I want to avoid posing another great IF of history, but would Britain in the fourth century AD have been very different if a military conquest had not taken place? The answer seems to be an obvious yes: Britain in the fourth century was irredeemably Romanized. What then about the fifth century? This is at once a more difficult and therefore more interesting problem, for to all intents and purposes Britain by the middle of the fifth century seems to be de-Romanized.

This raises a whole host of problems which are so far divorced from material study that they are rarely discussed. They are also problems which cannot be glimpsed without stepping outside conventional period boundaries; Romanists will therefore never be aware of them if they are well behaved. If we divide the Romanization of Britain into a super-structure such as language, administration, law, taxation and money, and a sub-structure such as ploughing, milking of cows, building of barns and cottages, forging of rakes and decorating with enamel, then do the two structures move into harmony with the Mediterranean world in the same way and at the same rate and for the same reasons, or are the two parts separate? If, as I strongly suspect, the two parts are separate, and Romanization and harmony are far greater and more obvious only in the super-structure, then what are the changes in the sub-structure, and how far are they congruent with political boundaries and monetary systems? Or, on the contrary, are they better aligned with the processes which affect the whole of North West Europe in the millennium from 500 BC to AD 500 without respect of Imperial boundaries or constraints?

This is the point at which relativity comes in because the observer has to stand somewhere in order to see around him and his point of stance may well affect the ideas that he creates. Thus the Romanist stands inside the empire and looks out; he is aware of neither uniformity or diversity outside the frontier except in as far as the

outside affects the inside. To ask someone with this point of view whether the process of empire is part of a wider series of events in which Italians got caught up is pointless. Firstly he will not have the knowledge to answer, and secondly, if he is tarred with the historical brush, he will have the view point of the Italians around whom the rest of the world revolved. The archaeologist outside the empire is separated from his fellow non-Romanist by thousands of miles, except for his immediate neighbours, and for over half the Roman world, there is no outside. From the North Sea, round the Iberian peninsula and probably across the whole sweep of Saharan Africa as far as Ethiopia any outsiders are sandwiched between Romans and the elements and are few in numbers. Older civilizations to the East pose a different question so that it is only by the time that we come to the Black Sea and continue round to the Baltic that there is the opportunity for the Mediterranean world to react with other similar or less developed cultures. Any standpoint within Europe is fraught with problems because it was either part of the Roman world, or part of the barbarian world, either was affected by Rome, or can not be seen to be so. Yet even on the European fringes there must have been a wave effect from the frontiers of the empire rippling outwards. Thus the process which includes the Romanization of north western Europe cannot be judged by comparison with a chosen null point in western Europe where there is supposed to be no Romanizing effect. There is no point in judging what happened in Britain against what happened in, say, Denmark because it looks very likely either that Romanization was having a ripple effect on Denmark, or else that contemporary changes there are part of some wider set of changes of which Romanization is only a part. It is no good going to the other extreme and trying to judge, for example the rate of material change in western Europe in the first to third centuries AD against a standard of what happened in China because that is part of a different interlocking system of parts with only very superficial known links to the West. The rate of change in China is presumably dictated by the processes of the time in China.

All this makes assumptions which, when stated explicitly, seem to be on the following lines. The inhabited world is split up into several different areas, and an area can be very roughly defined by the ease of communication within it. Thus the American continent and Europe have until recently had very little ease of communication and inevitably formed different areas. The Sahara ensures that the northern part of Africa communicated in the past very little with the south, but the northern part can communicate easily by sea and land

with western Europe and this produces southern Africa as one unit and the Mediterranean littoral and western Europe as another unit. This is the unit which the Roman empire developed, but it was only ever a part of the potential unit. I think I see how to study the Roman part of this unit, how to study the different non-Roman parts of the unit, and even how to study the interaction between the two, but what I find difficult even to express and visualize is the possibility that the unit works on its own processes of which the Roman empire may well be an involuntary part. And the problem that I am trying to express is what to judge Romanization and other unit processes against, because anything inside the unit is invalid *because* it is inside the unit, and anything outside is invalid because it is part of another unit.

I am hopeful that if we can take The Unit as something stretching from the Urals and Caucasus to the Sahara and the Atlantic and North Sea then the only fuzzy entity or entities are those processes about which I seem to be so concerned. What, just as an example, might these be? I am thinking of processes such as movement of population or ideas from outside the unit, which must by definition be rare; or processes of nucleation of settlement or dispersion of settlement, or perhaps the processes which cause either of these things whatever they might be; the bonds which might be getting stronger or weaker between ethnic groups or linguistic groups, or even religious groups, for none of these need coincide with the Roman empire and could have over-riding effects. Though I am reasonably well informed about burial customs inside the Roman empire and note a change from inhumation to cremation as part of a pre-Romanization process in England, I do not know what is happening on a wider front. In this position of ignorance I must leave the change in burial custom out of any list of 'Romanization processes' because the Roman empire and the non-Roman areas might all be going through a unit process with leaders and laggards, but all due to some unit change. We would then see this change as one of precocious Romanization simply because unit changes would tend to happen, perhaps, first or last in the more or less developed areas in the unit. I do not know whether this is possibly true of the whole unit, I do not know what might be causing such a unit (to a western European one could easily say a 'global') change, and I have no idea whether, if some of my basic worries are sound, burial rite is something which obeys unit demands or political demands or ethnic demands.

Perhaps my basic worry on relativity will stand another repetition. I am so unsure about all these things because I do not know where to

take as my fixed point, out of the danger of change, against which to judge what is happening in the unit, the Roman empire or whatever. Anywhere inside the Empire is no good because it is part of the change, and this applies to anywhere in the unit. Any site in the unit is subject to just the changes that are under investigation so it cannot be taken as a fixed point. On the other hand a site in another unit is likely to be irrelevant because it is part of a different system with different processes going on at different rates. This is why I started off with my mention of relativity, which might have sounded pretentious, because this seems to me exactly the problem which the discussion over time and the speed of light faces, crudely put in the disagreement between the crew of the space-craft and the people back home over how long it was since they went away.

But do nit-picking worries like this matter to the archaeologist? If he or she is concerned only with material and its classification then the answer is probably NO. But if the archaeologist goes on to interpret the material studied then the point which is the subject of my present mental confusion will make its presence felt if things are thought through far enough. If interpretation is period bounded and politically insulated then my worries will not be felt. Whatever happens in Britain between AD 1 and 100 is the result of the expansion of the Roman Empire, and there need be no more said. But if a comparative study of four regions in North West Europe is undertaken for the first century BC and the first century AD, and two of those areas turn into Roman provinces, and two do not, the whole subject and idea of Romanization might have to be radically changed. And the problem that would follow all the way through would be the point of stability against which different sorts and rates of change can be measured. What will be needed will be a point from which to have a view, and hence my title and my concern.

References

Groenman-van Waateringe, W. 1980 'Urbanization and the North-West frontier of the Roman Empire', *Roman Frontier Studies* 1979, (eds.) Hanson, W. S., and Keppie, L. J. F., Oxford: B. A. R., 1037-1044

4. Romanization: historical issues and archaeological interpretation

by Martin Millett

Over the past few years there has been an increased interest amongst both ancient historians and archaeologists in the perennial issues of Roman imperialism and Romanization. This interest coincides with a questioning of our own imperial past, particularly amongst those of the first generation to have grown up in the post imperial age. The important historical issues raised are first, the nature of Roman imperialism, its motives and methods, and secondly the nature of the processes of social change which we call Romanization. The purpose of this paper is to survey these issues and evaluate their relationship to the archaeological evidence.

There has been much important discussion by ancient historians about the nature of Roman imperialism. This discussion is of importance to archaeologists because it has called into question some of the fundamental, although unspoken, assumptions upon which many current archaeological interpretations are based. Garnsey and Whittaker (1978, 1-5) have summarized the debate, distinguishing several different views of the motivation for Roman expansion. These range from the development of Polybius' purposive view summarized in the quote (1.63.9) 'it was perfectly natural that by training themselves in such vast and formidable enterprises, the Romans should have acquired the courage to aim at world dominion and also fulfilled their aim', to the idea that the acquisition of an empire was an accidental result of a series of factors beyond the control of contemporaries. This view led Garnsey and Whittaker (1978, note 4) to recall J.R. Seeley's remark that the British acquired their empire 'in a fit of absence of mind'.

A more circumscribed variant of the same view is the doctrine of 'defensive imperialism' which interprets the acquisition of territory as a consequence of a series of entirely defensive acts. This may be attacked because it does not fully reconcile the clear expansionist interests of the ruling oligarchy with the collective interests of the

state, which were claimed by contemporaries to be defensive.

Dispute over the role of the oligarchy in initiating and in benefitting from territorial expansion, particularly in the late republic, has generated enlivened debate especially over the extent of any economic motivation. Badian (1968, 16-17) follows the traditional view that Roman imperialism should be viewed in terms of 'politics, strategy, social ethos and even psychology' dismissing the concept of any specifically economic motivation (Badian 1968, 16-28). Beard and Crawford (1985, 74-5) also stress the pressures for expansion which resulted from the structure of the socio-political system in Rome. Harris (1979, 54-104) has strongly challenged the underemphasis on the desire for economic gain by those involved in Rome's territorial expansion, pointing out that plunder and slaves were economically vital to the élite and their acquisition cannot be separated from the social and political competition characteristic of Roman society since the participants cannot have been unaware of the tangible economic benefits of expansion. In this sense it can be suggested that 'the ever-increasing need for warfare in the acquisition of personal riches, glory and clients amongst a competitive élite...was bound to produce an empire' (Garnsey and Whittaker 1978, 5).

The ramifications of these issues have recently been explored in discussions of the structural consequences of imperial expansion for the members of Roman society (Hopkins, 1978; Beard and Crawford 1985). These have increased our awareness of the social, economic and historical context of Rome's expansion in both the Republic and Principate highlighting a series of issues to which archaeology can contribute. Whichever view of imperialism one takes it is certain that the processes were not simple and clear cut, as they were bound up with a fundamental series of internal stresses and pressures which nevertheless resulted in the emergence of a remarkable empire. As Loewenstein has put it (1973, 380): 'it may be one of the miracles of the history of government that the Principate succeeded, at least for the first two centuries, in ruling its far-flung realm by the only feasible device: the regime proceeded from the simple fact of military occupation by the erstwhile conqueror, transforming it to a varying degree, into areas of local administration centrally directed by the Roman Imperial institutions and policies'.

Roman archaeologists, rather than ancient historians, have been slow to realise the implications of these ideas so they have rarely put them into practice by developing the field strategies capable of generating the new and critically valuable data which might clarify

the issues concerned. Romanists have rather taken the view put simply for Britain by Sellar and Yeatman (1975,11) that 'The Roman Conquest was, however, a *Good Thing*, since the Britons were only natives at the time'.

This has been disadvantageous to the discipline, as Roman archaeology has a major contribution to make both to the resolution of the specific historical issues and in contributing to broader debates in the social sciences. One of its major values lies in the possibility of comparing its results with information independently derived from the ancient sources, thus providing a valuable testing ground for ideas developed elsewhere. It is particularly unfortunate that Romanists have not addressed these more general issues as 'prehistorians and medievalists alike seem to take the view that the Roman empire constituted a great commercial organization, the administration of the empire directing and promoting the economic exploitation of the provinces. Nothing could be further from the truth' (Mann 1982). Thus Hingley (1981) and Hodges (1982) have both taken this view, developing the idea that the Empire can be viewed as an instance of a 'World-Empire System' as described by Wallerstein (1974) – that is an administered system of economic exploitation. Hodges, for instance, has stated 'we cannot deny that the ubiquitous market principle was a force planned by the Romans in their bid to articulate the Iron Age Economies on a new scale' (1982, 6).

Such a view is almost wholly at variance with the evidence which suggests first that the economic exploitation which did take place was not heavily directed and secondly that the net result of the flow of taxation was to move money from the centre of the Empire towards the peripheral provinces where the army was concentrated (Hopkins 1980) – the exact opposite of the model proposed (eg. Hingley 1981). This misfit should not blind us to the potential contribution that these broad approaches can make to our understanding by forcing us to attempt to grasp the processes at work, and encouraging us to compare these with the patterns found in other pre-industrial societies.

Many of the issues raised in this debate are however beyond the scope of archaeological analysis alone, and it is the contribution of archaeology which I believe to be of the greatest importance at present. The issue of why the Roman Empire came into being is beyond the archaeological evidence but the more pedestrian issues of how (descriptively) the Empire grew and functioned are issues which we can address, in the process providing information not available from other sources. These issues are central to any discussion of

Romanization, by which I mean the study of the two way process of acculturation within the Roman provinces.

The concept of acculturation is itself important as it removes us from the one-sided view of Romanization, encouraged by the entirely Roman textual evidence, which has dominated the literature on the subject. Thus it is often suggested that Rome brought a missionary zeal leading her to 'Romanize' the inhabitants of the annexed territories. The view has often been based on the Tacitean statement (*Agricola* 21) that Agricola 'gave private encouragement and official assistance to the building of temples, public squares and houses' which is taken to imply a policy of Romanization with the construction of a whole new social system in addition to the physical buildings of the towns (Millett 1990).

This view has recently been countered in the Dutch literature which has presented a far more balanced discussion of the process of acculturation by drawing on allied disciplines within the social sciences for interpretative insights (eg. Brandt and Slofstra 1983). This has led to more emphasis on the nature and organization of the native societies incorporated into the Empire. This new emphasis has great importance, and deserves to be emulated elsewhere, as the nature of the society which emerges after Romanization owes as much to the native as to the Roman ingredient. This point has often been lost in previous studies, in part as a result of the partisan nature of the ancient sources which limits their value for the understanding of native societies. Thus, for instance, Tacitus wrote 'who the first inhabitants of Britain were is open to question: one must remember we are dealing with barbarians' (*Agricola* 11). The resulting tendency has often been mistakenly to see native societies as comparatively primitive and uniform in character. Archaeology is demonstrating their variability and promises to provide far more information on the different ways in which the varying native societies were incorporated into the Empire (Gechter this volume).

The vital element in understanding and assessing the dominant British view of Romanization lies in removing the debate from one based on a prevailing pro-imperialist attitude to another which takes a more neutral view of the available evidence and in particular tries to assess the cultural changes, in relation to both the historical debate about the nature of Roman imperialism and our knowledge of the structure of the Empire.

Whether or not we accept a view of Roman imperialism as motivated by accident or design Roman administration has a series of

clear characteristics (Loewenstein 1973). These include an essentially loose centralizing structure which, from the Augustan period to the third century, allowed the cities a very large measure of self-government within prescribed limits. Incorporation thus involved a process of encouraging the native aristocracies to identify their interests with those of Rome. This was based on the republican tradition of avoiding any excessive administrative commitments which would have resulted from any highly centralized system of direct rule (Badian 1968, 77-78). The net effect of this method of administration was to keep the levels of taxation low, and maintain a remarkably small public service, at least until the Diocletianic reforms (Garnsey and Saller 1987, 20-42).

Against this background one must question more closely any idea that Rome had any real policy of Romanizing its conquered territories beyond ensuring an efficient administration without burdening herself with a heavy cost of either military occupation or direct administration. In this context we should note that Garnsey (1978, 253) has argued that the education of Britons (Tacitus *Agricola* 21) was solely aimed at making British chieftains and their sons identify with Roman interests, thereby encouraging them to fulfill their administrative rôle. We should also perhaps further question whether there was a distinction between such 'education' and the holding of heirs hostage to ensure parental loyalty. Any suggestion of a more comprehensive Romanization policy must present some cogent justification for its existence which takes account of the otherwise apparently *laissez-faire* attitude of Rome to her provinces.

Against this non-interventionist background, we need to develop an explanation of the acculturation of the provinces which made them appear more Roman. This needs to take more notice of the native side of the equation than has hitherto been normal. Absence of detailed information about pre-Roman native society is the most important single problem confronting archaeology in most of the areas of the western provinces, especially around the Mediterranean where our knowledge of social structures and settlement patterns is at best patchy.

A general model of Romanization is thus required, but it is important that this is based on our understanding of the core rather than the peripheries of the Empire. Such a model can be proposed tentatively, although it must be subject to substantial modification: it is presented as a stimulus to further research, rather than as an end in itself.

- 1) Given that Rome's main aim was to administer through the native élite, she worked through the native communities which were treated as city states whether they had this sophisticated organization, or one based on a tribal system which could be treated as such.
- 2) This meant that after conquest, the army was moved forward and civil administration established as early as possible through agreement – the *lex provincia* – imposed by Rome on the native élites.
- 3) This settlement gave the élite power to govern provided that it was exercised in broad accordance with Roman principles within a Roman style constitution which provided *inter alia* for taxation to be passed to the Roman administration.
- 4) The aristocracy involved in the administrative system thus did not need to be forced to become Romanized as the maintenance of their power within society was sufficient incentive in itself (Millett 1990):
 - a) within society their social position was reinforced by its identification with the external power (and force) of Rome.
 - b) This enhanced the desire of the élite to use the symbols of *Romanitas* by emulating Roman material culture. This will have set them apart from the remainder of society and provided a mechanism for the maintenance of their power within society, providing status indicators such that 'competition for honour proved as effective as compulsion' (Tacitus *Agricola* 21).
- 5) Progressive emulation of this symbolism further down the social hierarchy was self-generating encouraging others in society to aspire to things Roman, thereby spreading the culture.

This model generally envisages Romanization as a result of accidents of social and power structures rather than deliberate actions. As such it is complementary to the similar views on the nature of Roman imperialism already discussed.

Provided we understand that this process can use abstract as well as material elements (eg. language and style) it provides a useful interpretative framework in which the motor for Romanization can be seen as internally driven, rather than externally imposed. This has the great advantage that it does not require the postulation of Roman intervention which is neither widely attested nor to be expected within the imperial framework as presently understood. Several qualifications and clarifications to the model are however necessary to make it more generally applicable both geographically and temporally.

First the adoption of native aristocracies was clearly more straightforward and comprehensive in areas which had a previous tradition of urbanism and developed central authority. Indeed, we may suggest that (except in the East where Rome came up against a developed and powerful rival in the form of Parthia) the limits to Roman expansion were determined broadly by the presence of social systems which were adaptable to the Roman administrative system.

In those areas without a developed social hierarchy we need to know more certainly how the administration coped with occupation and the establishment of civil administration. It has often been thought that Rome established urban communities both by plantation and the deliberate fostering of the type of social system needed. Although there are clearly areas, like Lower Germany, where such action took place, we may perhaps doubt that such social engineering was really as widespread as has sometimes been suggested or that it can have had more than a marginal effect on social evolution.

It is also often suggested that the military presence in some areas stimulated the development of the institutions necessary for self-government. This presents a series of problems as any sustained period of direct rule would have usurped the function and power of any incipient native élite, and therefore seems likely to have damaged the chances of subsequent self-government. The idea of military government also presents a series of difficulties (Millett 1984) so it is *a priori* more likely that a rapid transition to native civilian rule was favoured. Given the gradual cessation of Roman expansion during the Principate, and the resulting longer periods of military presence on the frontiers, the problem of establishing self-government in frontier areas may have been compounded. Whatever the solution, it is certain that the areas of long term military occupation were exceptional, and should not be used as the principal model to apply to the more substantial areas where the military presence was more transitory.

The success of the administrative system in identifying the interests of the native élite with those of Rome is best illustrated by the remarkably low incidence of native revolts in the conquered territories. This is reinforced by an examination of the causes of these revolts which demonstrates that most are the result of internal social stresses generated by incorporation rather than by any sustained resistance to Roman repression (Dyson 1975).

Of more general significance for the model is the difficulty in interpreting the differences in the rates of Romanization in the incorporated provinces, with a general pattern apparently showing a slower emergence of Roman institutions in the provinces annexed in the Republic in comparison with those incorporated later. This seems entirely contrary to the predicted patterns, since the societies incorporated earlier seem to have been the more developed. Much information concerning this vital problem of the speed of Romanization has still to be collated from the archaeological sources, and it is here that archaeology perhaps has the greatest single contribution to make.

In the absence of detailed information it seems worthwhile suggesting that the developing structure of provincial government had an important influence on the nature of this process. In these terms it is possible to see a major structural distinction in administration between the Republic and Principate. The incorporation of annexed land in the Republic led to large scale, not to say unbridled, economic exploitation by the Roman élite both through removal of the spoils of war and subsequently the expropriations of taxation by the *publicani* on their own behalf as well as that of the Roman state. The net effect of this may have been to increase economic activity (in Spain for instance) but it seems that this process had only a limited centralizing effect on the native societies as it was essentially stimulated by external activity. This contrasts with the ideas frequently discussed recently where trade contacts between peripheral societies and core areas have been seen as a stimulus to centralization within them (eg. Nash 1978). This is perhaps surprising as the Late Republican period when economic exploitation of the provinces was unbridled best fits the exploitative economic system described in such core-periphery models (eg. Hingley 1981).

We may see this delay in Romanization in the development of towns in the three Gauls, which does not appear to take place for a generation or so after the conquest (Wightman 1985). The same slow start to urbanism also seems apparent in Spain, at least away from the previously urbanized areas. Both these observations are surprising in terms of the model, especially as Roman government was essentially city based.

The provinces incorporated in the Principate seem to have become centralized far more rapidly, and to have generated more Romanized institutions comparatively quickly. This Romanization also affects the older provinces from the beginning of the Principate with a rash of new civic buildings in Italy, Spain and Gaul from the Augustan period (Ward-Perkins 1970, 1-4). Although this in part reflects a shift in the architectural *milieu* at Rome, we must view this change itself as significant in the process we are observing.

The whole pattern may be explained by Augustus' alterations in the administrative system crystallizing major changes which had a twofold effect, first generating local administrative centralization and secondly weakening the hold of the *publicani*, thereby ameliorating the effects of the excessive zeal of the tax gatherers, and leaving more money in circulation to be accumulated by the local élites who subsequently used it to invest in their own cities. The centralizing effect of the new administrative system resulted from the collection of

taxes through the cities in the Imperial Provinces. This will have both enhanced the roles of the cities as economic and social centres, since the focal tax gathering functions will have multiplied the effect by increasing their marketing and administrative roles. This will also have benefitted the controlling élites who are unlikely not to have benefitted financially from their control of taxation and marketing. The process may thus have acted as a stimulus to urbanism and Romanization, changing the trajectory of the established provinces and preparing for new indigenous development in the newly acquired territories. It is therefore paradoxical that these changes to the administrative system increase the misfit between the Roman system and that described in Wallerstein's 'world system', as direct economic exploitation of the peripheries by the core seems to have been trimmed during the Augustan period.

These ideas suggest some of the mechanisms by which Romanization may have occurred. They are not themselves an end, but are designed as a series of ideas to stimulate the collection of new data and the enhancement of the role of archaeology by moving it to address questions not answerable from the texts. For this to happen the collected data urgently need to be collated and focussed on specific issues. If I may, I should like to codify some of the essential questions which we presently need to address:

- 1 What was the nature of the military presence in each territory, and how rapid was the conquest and subsequent demilitarization?
- 2 How quickly and in what ways were native societies integrated into the Empire?
- 3 How urbanized was the territory before conquest and how was this trajectory changed in speed and intensity following annexation?
- 4 How is the intensity and direction of trade and exchange affected by incorporation into the Empire?
- 5 Is the development of agriculture and rural settlement affected by incorporation into the Empire?

Acknowledgements:

I would like to thank Simon James and Tony King for reading and commenting upon this paper. I remain responsible for any errors.

References:

- Badian, E. 1968 *Roman Imperialism in the late Republic*, New York: Cornell paperback (second edition)
- Beard, M. and Crawford, M. 1985 *Rome in the late Republic*, London: Duckworth
- Brandt, R. and Slofstra, J. 1983 *Roman and Native in the Low Countries*, Oxford: BAR
- Dyson, S.L. 1975 'Native revolt patterns in the Roman Empire' in, H. Temporini (ed.)

- Aufstieg und Niedergang der Römischen Welt II.3*, Berlin: W. de Gruyter, 138-75
- Garnsey, P.D.A. 1978 'Rome's African Empire under the Principate' in, Garnsey, P.D.A. and Whittaker, C.R. (eds.) *Imperialism in the Ancient World*, Cambridge University Press, 223-54
- Garnsey, P. D. A. and Saller, R. 1987 *The Roman Empire: Economy, Society and Culture*, London: Duckworth
- Garnsey, P.D.A. and Whittaker, C.R. 1978 'Introduction' in, Garnsey, P.D.A. and Whittaker, C.R. (eds.) *Imperialism in the Ancient World*, Cambridge University Press, 1-6
- Harris, W.V. 1979 *War and Imperialism in Republican Rome, 327-70 BC*, Oxford: Clarendon Press
- Hingley, R. 1981 'Roman Britain: the structure of Roman Imperialism and the consequences of Imperialism on the development of a peripheral province' in, Miles, D. (ed.) *The Romano-British Countryside*, Oxford: BAR, 17-52
- Hodges, R. 1982 *Dark Age Economics: the origins of towns and trade AD 600-1000*, London: Duckworth
- Hopkins, K. 1978 *Conquerors and Slaves*, Cambridge University Press
- Hopkins, K. 1980 'Taxes and trade in the Roman Empire 200 B.C. – A.D. 400' *J. Roman Stud.* 70, 101-25
- Loewenstein, K. 1973 *The Governance of Rome*, The Hague: M. Nijhoff
- Mann, J. C. 1965 'City foundations in Gaul and Britain' in, Jarrett, M. and Dobson, B. (eds.) *Britain and Rome: essays presented to Eric Birley*, Kendal: Titus Wilson, 109-113
- Mann, J.C. 1982 Unpublished paper on Roman Imperialism read to research seminar, Durham University
- Millett, M. 1984 'Forts and the origins of towns' in, Blagg, T.F.C. and King, A.C. (eds.) *Military and Civilian in Roman Britain*, Oxford: BAR, 65-74
- Millett, M. 1990 *The Romanization of Britain: an essay in archaeological interpretation*, Cambridge University Press
- Nash, D. 1978 'Territory and state formation in Central Gaul' in, Green, D., Haselgrove, C. and Spriggs, M. (eds.) *Social Organization and Settlement*, Oxford: B.A.R., 455-76
- Sellar, W.C. and Yeatman, R.J. 1975 *1066 and all that*, London: Methuen paperback
- Wallerstein, 1974 *The Modern World System: capitalist agriculture and the origin of the European world economy in the sixteenth century*, London: Academic Press
- Ward-Perkins, J.B. 1970 'From Republic to Empire: reflections on the early Provincial architecture of the Roman West' *J. Roman Stud.* 60, 1-19
- Wightman, E.M. 1985 *Gallia Belgica*, London: Batsford

Section II

Initial Contacts and Acculturation: The Northern Provinces

The papers in this section are concerned with the north-western provinces: Belgic Gaul, Lower Germany and Britain. These regions were on the periphery of the Roman world, and were perceived so by the Romans themselves. Within them, Celtic-speaking peoples were suddenly brought into direct contact with the Romans as the result of Julius Caesar's campaigns in the 50s BC. Their experience was in contrast with that of Hispania ([Section III](#)), where generally there was rather more familiarity with Greco-Roman culture. In the north-west, it might be expected that initial contact and acculturation was closely connected with the act of Roman conquest or the subsequent threat of it (even if in Britain it was not to happen for nearly a century after Caesar's expeditions), as well as the effects of selective exposure to Roman material culture.

Despite the above attempt at generalization, it is clear from all the papers in this section that Haselgrove is right to emphasise the importance of attention to the differing histories of acculturation of different groups and regions. For this reason, a Roman province may be too large as a suitable area for analysis. One problem is in deciding whether archaeological evidence for change (eg. coinage, wine amphorae, settlements) is to be interpreted as Romanization, or the result of other long-term processes (a possibility which Reece also considers). That is affected by the quality of the archaeology, but also by the appropriateness of the questions asked of the evidence: whether for example it can be used to define the territories of the Gaulish *civitates*. Haselgrove uses the Aisne valley as a testing ground for these ideas.

The evidence for settlement nucleation which he discusses indicates the 'core' communities through which those further on the periphery experienced Roman acculturation at one remove. The core-periphery

model, and the interpretation of changes in settlement type and settlement pattern in relation to contact with the Romans, are also prominent in Bloemers' chapter on Lower Germany, a relatively underdeveloped region in 50 BC. He contrasts Nijmegen with the Batavian tribal area around it: the former he interprets as an urban settlement planted in a territory which, to judge from the different artefact types, had little contact with it, such contact as there was being focused on the native élite, for military reasons: the Batavians provided crack troops, and were consequently left immune from taxation.

Kunow is led to examine a different aspect of Rhineland settlement by noting the results of field survey which show increasing Germanic occupation of the east bank of the Rhine from the mid-first century AD. This is not an area kept empty for strategic reasons as historians had deduced from Tacitus. Applying Galtung's model of imperialism, he argues that the Romans failed to 'build a bridgehead' to the German periphery (and assimilate it), because social institutions were insufficiently developed for the necessary response. Only in the northern part of the *Vorfeld* were relations of clientship successfully established.

A powerful noble élite would seem to be a requisite of the social development envisaged by such explanatory models. The case of the Ubii, examined by Gechter, appears to be an exception. They lacked a nobility, but nevertheless were loyal allies of Rome, perhaps because they needed Rome's protection. New evidence from Neuss and Bonn indicates that native settlements had preceded the building of the forts; Cologne, however, appears to have been newly founded as an urban centre for the *civitas*.

Trow, in discussing Britain, is concerned with very similar matters to those discussed by Haselgrove and Bloemers. Before the Roman conquest, the south-east is distinguished from the rest of Britain by the degree to which imported Roman goods were used to display social differences, mainly through an etiquette involving exotic food, drink and tableware. The economic significance of this as potential evidence for more extensive trading relations is problematic. There is an economic reorientation after the conquest, for which Trow sees the army, and the introduction of coinage for army pay, as the catalyst. The goods previously imported became more common, and so the élite turned to villa architecture (further discussed by Blagg below) to continue the demonstration of its prestige. Urban development, and its connexion with native *oppida*, is complex: some of the latter (eg. Bagendon) may have been aristocratic estate centres rather than truly

urban settlements, here (as in northern Gaul) is a contrast with the nature of urbanization in the Spanish provinces ([Section III](#)).

5. The Romanization of Belgic Gaul: some archaeological perspectives

Colin Haselgrove

Introduction

Like most empires before her, Rome generally sought to rule newly conquered peoples through the existing native élites, backed by her own imposed administrative and military structures as these had evolved through two centuries of near-continuous expansion under the later Republic. Nowhere evokes the first stage of this process more vividly than Belgic Gaul, and Hirtius' account of how, in 51BC,

“Caesar in Belgio cum hiemaret, unum illud propositum habebat continere in amicitia *civitates*, nulli spem aut causam dare armorum ... itaque honorifice *civitates* appellando, principes maximis praemiis adficiendo, nulla onera nova iniungendo, defessam tot adversis proeliis Galliam condicione parendi meliore facile in pace continuit”

(Commentariorum de Bello Gallico (BG) VIII, 49).¹

On this occasion, the short-term military consideration that lenient treatment of the native élites would lessen the likelihood of rebellion in his rear probably weighed rather more with Caesar, about to make his bid for supreme political power, than creating a framework for the future Roman province. Even so, the episode, following a relatively brutal war of conquest, goes far to explain the achievement which sets the Roman Empire apart from those which went before: Rome's outstanding success in retaining the possessions which her military prowess brought her (Mann 1986). In ensuring the continuing cooperation and paramountcy of the Gaulish élites, Caesar was in fact acting very much in accordance with what gradually became standard Roman practice everywhere. The same is true of the treaties by which he vested his loyal Gaulish allies with increased lands and population (eg. BG. VI, 4; VIII, 6).

The successful development of the new Gaulish provinces was further assisted by the underlying similarities between the social and

political ties which held the indigenous groups together (eg. BG. I, 4, 18; VI, 12), and the patron-client relationships of the Roman world (Crumley 1987). Whether or not in Gaul such ties entailed the same rights, duties, privileges and obligations as Roman custom, they were clearly sufficiently similar to be described and exploited as such. Accordingly, granting of Roman citizenship to native leaders and linking their self-interests directly to those of the Julio-Claudian house by making them its clients (Drinkwater 1983) was another obvious way of using the existing social structure to ensure the continuing loyalty of the élite. The relatively rapid take-up of Roman culture and language by the class who owed their continued position to the Roman alliance, in Belgic Gaul (Haselgrove 1987) and elsewhere in the western Empire, is thus hardly surprising. In turn, gradual emulation of élite behaviour by other sections of the population, especially the upwardly mobile elements, provided the motor for the more widespread changes in architectural fashion and material culture which we conceive of as Romanization. This transformation was thus effectively locally-driven rather than expressing any conscious policy from the centre (M. Millett, this volume), so the outcome inevitably varied in form and degree from one people to another, according to circumstances and history. Therein also lies its interest.

The Romanization of Belgic Gaul in particular and the nature of developments there during the first centuries BC and AD has seen much recent discussion, most notably by Wightman in her brilliant study of the province (1985), and in earlier work (eg. Wightman 1971; 1975; 1978). In the area of the province which was subsequently detached as Germania Inferior, a similar approach which gives due weight both to the indigenous population and to Roman innovations has been followed by Dutch (eg. Bloemers 1983; 1988; this volume; Roymans 1983; Willems 1984) and German scholars (eg. Gechter and Kunow 1986; this volume). I myself have recently argued that various features of the archaeological record of Belgic Gaul in the later first century BC are best explained by Roman rule at this crucial period being *de facto* largely through pro-Roman native factions, and by the difficulties these clients may nevertheless have experienced in maintaining their position even with Roman backing (Haselgrove 1987, 113-121).

Building on the foundation offered by these studies, we can therefore take stock of the directions which research might now take. Three questions appear fundamental. The first is methodological and concerns the choice of the province as the conventional scale of

analysis for much archaeological analysis of Romanization. Is this the scale most appropriate to our understanding of the processes at work? A second, related question must be whether current archaeological fieldwork is delivering the information we require, and what indeed are our expectations of archaeological evidence? Thirdly, and allied to this, are the questions posed of the material sufficiently realistic, ie. are they potentially answerable, or should we be addressing different problems? Here I shall discuss these issues specifically in relation to Belgic Gaul, but they are clearly of relevance to most of the western Empire.

Romanization: scale of analysis and the Iron Age background

According to the model outlined above and elsewhere (Haselgrove 1987; Millett this volume), Romanization however uniform the eventual outcome was in material terms – represents the aggregate outcome of processes operating essentially at a local level, people by people. Even within a single province, the form and degree of change varied between different groups and regions, depending on the socio-political organization and cultural complexity of the conquered peoples, differing histories of pre-Conquest acculturation, the circumstances that impelled a Roman take-over, the potential of different areas for agricultural and industrial intensification and wealth accumulation, and so on. A similar point has recently been made by Burnham (1986) in criticizing the application of monocausal explanations to the growth of small towns in Roman Britain. Analysis at a provincial level conflates too many different trends, thereby disguising underlying patterns and processes wherein may lie the explanation for the development of particular sites or groups of sites. Provinces are, of course, a valid and interesting level of analysis for asking certain questions, and to compare, but this supposes that their internal heterogeneity has first been characterized and comprehended, as in Gechter and Kunow's (1986) contrasting of developments within the differing natural environments of the middle Rhineland or in Willem's (1984) study of the Batavi.

In Belgic Gaul, the necessity of approaching the whole through its constituent parts is at its most acute, given the sheer size and diversity of the province. Moreover, both textual and archaeological evidence suggest that there were considerable variations in the social and political organization of the different later Iron Age communities inhabiting the area, and indeed in their level of exposure to the

Roman world prior to the Conquest. Thus, although Caesar no doubt elaborated some political and ethnic distinctions in his Commentaries purely to serve his own ends in Rome, other variations in his narrative and terminology relating to settlement and society (Buchsenschutz and Ralston 1986) suggest a considerable degree of cultural and social heterogeneity even within the major regions. Thus, although Caesar treats the Belgae as a separate people with their own distinctive language, customs and laws (BG., 1,1), only part of the population which lived between the Rhine, the Seine, and the Marne, actually gave itself this name (Hawkes 1968). The territory occupied by these groups, which Caesar calls 'Belgium', coincides roughly with the historic regions of Picardy and Upper Normandy (fig. 5.1).

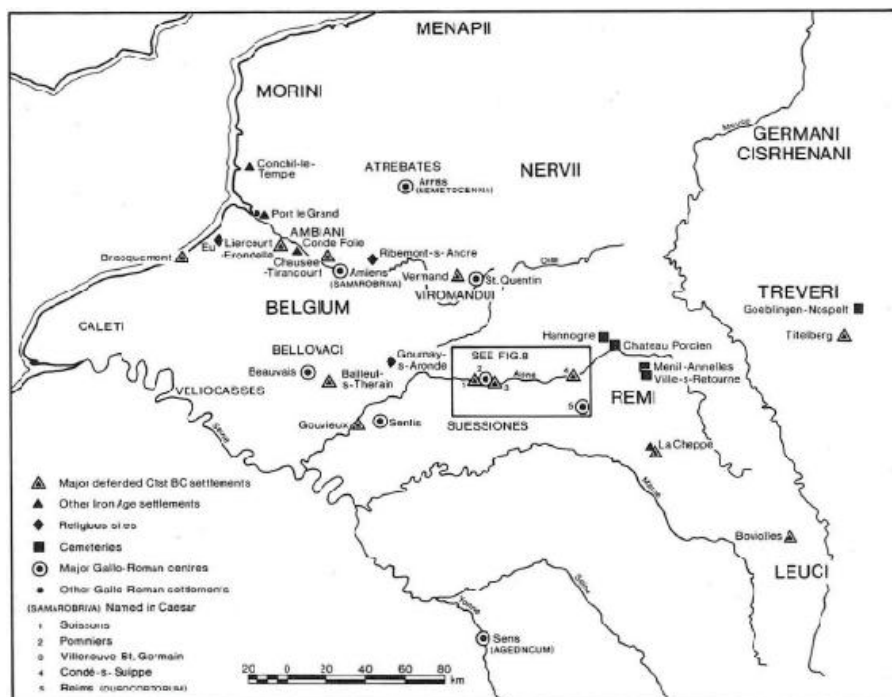


Fig 5.1. Belgic Gaul, showing the principal peoples and sites mentioned in the text.

This grouping may well have its origins in the hegemony which Nash (1984) deduces that the communities of the Somme region exercised over their neighbours at a slightly earlier period. Although the gold coin evidence suggests that by the mid first century BC the focus of power had shifted to the north-east of the Paris basin, the inhabitants of this 'Belgium' clearly had some capacity for common action in the face of the Roman advance (BG. II, 4), even perhaps to the extent of adopting uniform currency measures (Scheers 1977).

However, as in all Caesar's passages which imply a measure of centralization or a permanent leadership, we must not forget that we are dealing with societies in a period of high stress. Temporary war leaders may well have been appointed to unify larger groupings, but their power may have been as short-lived as the crisis that brought them to prominence (Collis 1987), outward appearances masking a reality of fragmented, competing groupings.

Outside 'Belgium' we find several other important groups which are differentiated on a variety of grounds; Caesar's allies, the Remi (BG. II, 3 etc), the Nervii and Celtic-speaking Treveri both of whom laid claim to Germanic ancestry (Tacitus, *Germania* 28), and a variety of smaller units referred to collectively as the Germani Cisrhenani, who seem to have been migrants from across the lower Rhine, rather like the Ubii resettled by Agrippa on the western bank in the later first century BC (Wightman 1985). Cross-cutting these are further distinctions introduced by Caesar, even if he himself attached no obvious significance to them (Hachmann 1976). In connection with 'Belgium' and the Remi he speaks of heavily fortified settlements called oppida, apparently resembling sites elsewhere in Gaul, whereas the Nervii and coastal groups such as the Morini and Menapii did not, when in danger, take refuge in fortified settlements, but in swamps, fens or forests (BG. II, 28; III, 28-9, etc). Even if he had no clear notion of their social and political structures, Caesar's differentiating the Morini and Eburones as *barbari*, or the Nervii, who would not allow the importation of wine or other luxuries (BG. II, 15) as a *gens* and *homines feri* (BG. V, 34; VI, 36) is likely to be significant (Haselgrove 1987; Roymans 1983).

At face value, these attributes suggest decentralized political conditions and a dispersed settlement pattern in Belgic Gaul different to those in central Gaul, where it is frequently argued that communities such as the Aedui, the Arverni and the Bituriges had achieved political statehood and were already urbanized before the Roman Conquest (eg. Crumley 1987; Nash 1976). However, the archaeological and numismatic evidence leaves little doubt that it would be wrong to extend this characterization to the whole of Belgic Gaul. As Caesar himself recognized, it properly applied only to the coastal and marshland communities in the extreme north, where the settlement pattern is very different. 'Belgium' proper contains several major fortified sites, such as Bailleul-sur-Therain, Bracquemont, La Chaussée-Tirancourt, Gouvieux, Liercourt-Erondelle and Pommiers (Buchsenschutz 1984). Their intensity of occupation, while not always fully determined, is not conspicuously different from that associated

with the earlier stages of the fortifications further to the south, such as modern excavations are now revealing at Mont Beuvray (Peyre *et al.* 1987). Other undoubtedly important late Iron Age centres are the Titelberg with its succession of regularly laid-out timber buildings (Metzler and Weiller 1973; Rowlett *et al.* 1976) and Boviollès, in the territories of the Treveri and the Leuci respectively.

An orthogonal layout and dense occupation are also features of a second group of complex sites occupying low-lying locations on the southern fringes of Belgic Gaul: Villeneuve St Germain and Condé-sur-Suippe in the Aisne Valley (Demoule and Ilett 1985), La Chappe, and probably Reims (Neiss 1984), Durocortorum of the Remi, where Caesar convened a Gallic council in 53 BC (BG. VI, 44). However, some supposedly important places mentioned by Caesar have as yet no certain archaeological substance, eg. Samarobriva of the Ambiani, where he convened a Gallic council in 54 BC and wintered in 54-3 BC (BG. V, 24, 47, 53) or Bratuspantium of the Bellovaci (BG. II, 13). Roman Amiens was a new foundation of the late first century BC (Bayard and Massy 1983). Since both Samarobriva ('the Somme crossing') and Nemetocenna ('the forest') – Caesar's winter-quarters in Atrebatian territory in 51-50 BC (BG. VIII, 46) – refer to general topography (Wightman 1985), the names may well have been transposed from earlier settlements in the vicinity.

The coin evidence presents a complementary picture to the major fortified settlements (Haselgrove 1988). Most northern coastal communities had no coinage until a late date (Roymans and van der Sanden 1980) or only used coins imported from elsewhere in Belgic Gaul. Gold was the only metal used in two of the principal circulation areas, in 'Belgium' and in what became Treveran territory, prior to the mid first century BC, apart from a few distinctive thin silver issues found in Picardy (Scheers 1977). All these coinages are uninscribed and neither the silver, nor the few bronze series with possible pre-Caesarian origins can be related to particular gold types. Inscribed struck base metal issues, here as elsewhere, are primarily a post-Conquest phenomenon, continuing to circulate, often in enormous volumes and over long distances (eg. Reding 1972). Later on, during the Augustan period, they were quite possibly used alongside actual high-value Roman issues, as the Roman monetary system and denominational structure gradually closed its hold over the province (Crawford 1985).

In the Champagne chalklands and further south-east in the territory of the Leuci, coinage development followed a different path, with extensive uninscribed potin (cast bronze) coinages achieving

widespread circulation there in the early first century BC. This was essentially an extension of the core area of early potin production, focused on the agriculturally-rich plains of eastern-central Gaul (Haselgrove 1988). These potin coinages were arguably issued to meet similar functions to precious metal coinage by authorities lacking the requisite resources. However, the scale of the finds at many nucleated settlements, eg. Basel-Gasfabrik (Berger and Furger-Gunti 1981) and Condé-sur-Suippe (Massy 1983), leaves little doubt that once in circulation, potin rapidly acquired uses in everyday transactions which resulted in its frequent loss.

Apart from the Aedui, the core area of early potin use embraced the territories of the Sequani (the predecessors of the Remi as the other paramount community of Gaul; BG. VI, 12) and the Lingones, together with the Helvetii immediately to the south-east. These three peoples were, it seems, initially included in Belgica on strategic grounds (Wightman 1985) and later detached when Germania Superior was created (Drinkwater 1983). All three peoples are also included by Nash (1976) in her zone of inferred state formation in central Gaul, the Sequani and the Helvetii certainly, the Lingones probably. Here, further discussion will be mainly directed to the part of the eventual province which is now northern France, which more nearly coincides with Caesar's idea of Belgica. But it is important to note that at its furthest extent, Belgica seems to have embraced a spectrum of political complexity ranging from the genuinely acephalous communities of the coastal zone, through more hierarchical regionally-organized groups, but nevertheless still competitive and relatively unstable in their behaviour patterns, as in 'Belgium' – chiefdom societies in anthropological parlance (eg. Earle 1987) – to the putative fully-formed states in the extreme south of the province. Alongside this trend of increasing political centralization from north to south, we can also discern other consistent trends, of greater settlement complexity and sophistication of money use, the closer we come towards the boundaries of the Roman world at the time of Caesar's intervention in Gallia Comata in 58 BC.

The same trend is apparent in the penetration of Roman ideas and goods before the mid first century BC. The primary evidence of contact is afforded by pre-Caesarian burials such as Hannogne and Chateau Porcien in the Aisne Valley region (Flouest and Stead 1977) and by the familiar map (fig. 5.2) showing the findspots of Republican Dressel 1 wine amphorae (Fitzpatrick 1985). Even allowing for the biases which Fitzpatrick discusses, the overall distribution apparently bears out Caesar's observation that being farthest removed from the

Roman province, Belgic Gaul (ie. the more northerly parts of the province) was least often visited by merchants with luxuries for sale (BG. I, 1) and his various references to groups on either side of the Rhine, such as the Nervii, who would not admit merchants (Buchsenschutz and Ralston 1987).

The significance of the material along the southern fringes of Belgic Gaul is less easy to assess. Many of the later Dressel IB amphora finds are presumably post-Conquest arrivals, when the volume of imports rose markedly (Haselgrove forthcoming a). Far fewer sites yield the earlier Dressel 1A amphora type – only the Titelberg and one other site in Treveran territory, for example, have this form. Even where larger numbers of finds occur, as in the north-east of the Paris Basin and in Champagne, there is nothing to compare with the massive quantities from sites to the south such as Basel Gasfabrik, Mont Beuvray or Chalons-sur-Saône where 24000 amphorae were dredged from the River Saône (Tchemia 1983). Similarly, only three sites in Belgic Gaul have yielded Campanian ware – the Titelberg, Condé-sur-Suippe, and Villeneuve St Germain – whereas these finewares are common on sites nearer the original Roman province (eg. Nash 1976). Nor does the manner in which the Remi placed themselves at Caesar's service in 57 BC suggest that their previous relations with Rome were direct (BG. II, 3), although their favourable disposition could have been of longer standing. However, after the Conquest, the quantity and range of imports reaching Belgica rapidly widened to include Spanish amphorae alongside Italian (Fitzpatrick 1985), central Gaulish micaceous wares and Arretine. Amiens indeed, has the third largest collection of Arretine stamps north of the Alps (Massy 1980), although whether this indicates a military phase or belongs to the earliest urbanization is arguable (Walthew 1982).

The bulk of the contact between even the southern fringes of Belgic Gaul and the Roman world was probably indirect, both in the pre-Conquest period and in the following decades (Haselgrove 1987). Certainly, the decreasing number of imports found to the north of central Gaul is most easily interpreted as prestige trade mediated by the halo of more developed polities there, rather than as direct commercial trade with the original Roman province in southern Gaul (Buchsenschutz and Ralston 1987). Even so, these processes probably contributed to the enhanced degree of centralization apparent in this zone and along the southern fringes of Belgic Gaul, compared to further north. The key question, however, is what effects these differences had when these communities came to be reorganized as city states on Roman lines.

In northern Belgica, the *civitates* created during the Augustan census and reorganization of Gaul in and following 27 BC must have been essentially artificial (cf. Wightman 1985). Elsewhere we can be fairly sure of the existence of more permanently established élites with whom Rome could deal. As noted above, readily assimilable principles of social reproduction certainly existed in Roman and Gaulish society, the question is rather how fully were the latter elaborated and integrated in larger structures which the Roman administration could use as a basis of *civitas* organization? How stable was élite control? How frequently was power transferred, and between whom? Over what size of territories was it exercised? What was the cultural, ethnic or geographical basis of the various identity groups that so perceived themselves, or were recognized as such by others? How stable or shifting were these groupings and the boundaries between them? The increased emphasis on large fortified sites in the late La Tène period in Belgic Gaul is widely held to indicate an upsurge in warfare at this time (eg. Hachmann 1976). Equally, what was the degree of social and economic differentiation of these groupings? And in particular, to what extent did the complexity of the communities of southern Belgic Gaul approach that of their more southerly neighbours, presenting fully-formed territorial entities which could be taken over or adapted as self-governing units largely as they stood?

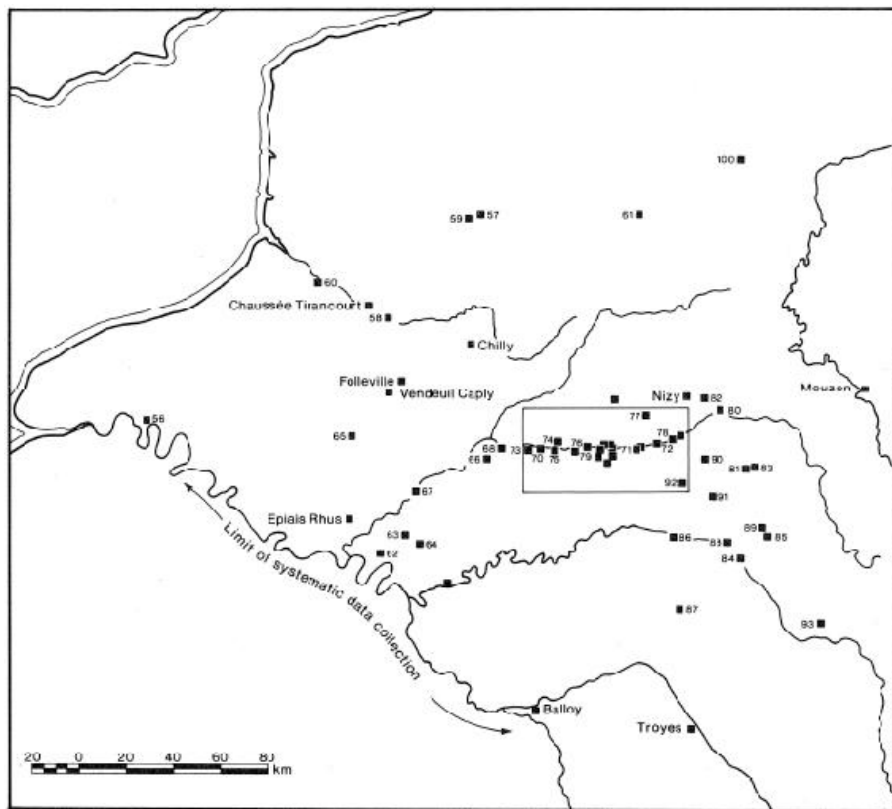


Fig 5.2. Findspots of Dressel 1 wine amphorae in Belgic Gaul (after Fitzpatrick 1985. with additions).

Recent opinion is significantly more cautious about the degree of political complexity and urbanization achieved even in central Gaul prior to 50 BC. Woolf (1988) has recently reassessed the probable level of differentiation, integration and organizational capacity of the communities inhabiting this region. On none of these criteria, he concludes, can the case for political statehood made by Nash (eg. 1976) and Crumley (eg. 1987) be maintained from the archaeological and textual evidence, although the degree of organization in the late Iron Age is certainly greater than at an earlier period. The preparation undertaken by the Helvetii prior to their attempted migration is a case in point (Champion 1980). The coin evidence presents a comparable picture, also indicating an intensified trend to centralized political authority and increasing monetization of local economies, but stopping short of demonstrating state control (Haselgrove 1988). Similarly, use of the term 'urbanized' seriously overstates the position that we can demonstrate for the late Iron Age by archaeological means (Ralston 1984). Even at the leading fortified sites, the principal

developments belong to the post-Conquest period (Collis 1984). Those open sites like Aulnat, Basel-Gasfabrik, Levroux and Roanne which do demonstrate settlement nucleation by the late second century BC (Colin 1984) fall well short of the criteria demanded of urban centres. If anything, sites like Condé-sur-Suippe in the Aisne Valley or La Chappe – where an open settlement at Camp de Mourmelon (Chossenot 1987) could be contemporary with the fortified Camp d'Attila 3 km away – in Champagne, appear more sophisticated. However, on the current chronology, these postdate the open settlement horizon further south (Colin 1984), while at the Aisne Valley sites, the regularity of the layout (eg. Demoule and Ilett 1985) implies implantation in special circumstances.

Beyond these points, however, there is broad agreement. The areas of greatest economic and political development in the late Iron Age were focused on the best agricultural land which is provided by the plains of eastern-central Gaul (Woolf 1988, fig. 3). This region shows the earliest signs of increased settlement nucleation and more sophisticated money-use, and by the mid first century BC, it had been extensively opened up to Roman trade. The more populous areas of southern Belgic Gaul seem to participate in the same general trend, albeit to a lesser degree. But even the most highly organized of these late Iron Age communities were probably little more than islands of greater complexity and population density, only loosely held together by ties of alliance and paramountcy, and physically separated from each other by large upland expanses and other sparsely populated boundary zones.² Some groups were thus in a real sense ecologically circumscribed and defined (Nash 1978; Woolf 1988). Those core communities distinguished themselves as named identity groups, but the boundaries between them were probably neither immediate nor stable (Crumley 1987). Rather, although they economically and numerically dominated the smaller groupings around them, these latter were probably only loosely attached to them as clients, as with those of the Aedui or the Arverni (BG. VII, 75), or were effectively outside their control altogether (Woolf 1988). As Caesar had most of his dealings with the more important peoples, these smaller groupings are often unrecorded, as the pagus Catuslo attested by an inscription from the sanctuary at Bois L'Abbé, Eu (Mangard 1982).

Similarly, in 27 BC it was to these same larger and richer peoples, who by then had also developed more recognizably central place settlements, that Augustus turned in transposing the Roman concept of a *civitas* (Mann 1960) to Gaul. In the process, Augustus distorted the model, first to accommodate the greater scale of these core territories

(Woolf 1988), and secondly through expediently attaching thinly populated areas to these 'core' peoples on geographical grounds or because of non-viability as separate units, and thirdly by ratifying the *de facto* incorporation of lesser peoples, made clients by the Caesarian settlement (cf. BG. VIII, 6). This then is one possible explanation of the unusually large *civitas* territories that are characteristic of Gaul (Mann 1960).

Archaeological perspectives 1: recent research and settlement continuity

The crucial formative period for the Romanization of Belgic Gaul was undoubtedly that between Caesar's campaigns and the early first century AD when the Roman garrison became permanently established along the Rhine frontier (eg. Gechter 1979) with its long-term economic consequences for the development of both regions (Hopkins 1980). The period is, however, only intermittently documented. In outline, Gallia Comata was left largely to its own devices until 40 BC when it was taken over by Octavian. He successively devoted his attention first to military requirements, appointing Agrippa, his leading commander, to his first governorship in 39 BC, when he proceeded to organize the road communications, then from 27 BC (as Augustus) to creating the administrative and legal basis of what now became three separate provinces, and finally, from 16 BC, to finding a solution to the German question (Drinkwater 1983). So much is reasonably certain. But for more information, we must then turn to archaeology "for the most consistent picture of the actual society in the course of its adaptation" (Wightman 1985, 44).

What can archaeology add? Archaeology, it is true, starts from the data provided by individual excavated sites. It is not, however, particularly well-equipped to transform this kind of information into histories of 'events and individuals' in the sense of Braudel (1972) – such as Caesar's narrative provides. Rather, archaeology synthesizes its knowledge of a mass of specific events, such as filling a pit, building a house or abandoning a site, and observations as to date, location, quantity, type, etc, to infer more general cultural patterns and processes. Owing to the partial nature of archaeological data, the resultant economic and social perspectives are much more akin to Braudel's histories of 'groups and groupings' and 'of the very long term' – seen in the relations of a population with its environment (1972, 20-1).

Not so much should we be addressing questions which are not

answerable from textual evidence (Millett, this volume), as selecting from them the most worthwhile questions which are answerable from archaeological data. In Braudel's terminology, the Romanization processes most amenable to archaeological study will be those relating to 'groups and groupings'. However, providing the overall picture of variation through time and between regions is first ascertained, it may then be possible to link certain kinds of changes to particular historical causes and thus bring these two types of knowledge more meaningfully together (Wightman 1985). If this is to happen, the different kinds of change need to be more precisely defined than at present. It also presupposes that the right kinds of archaeological data are, or already have been, collected.

Much harm continues to be done by the failure to distinguish rigorously between those changes set in motion by the Conquest and those which merely represent an intensification of already existing trends. I have already noted how in terms of trade, the material Romanization of Belgic Gaul was a long-drawn out process with origins in the late second century BC. Against this, the actual military conquest hardly registers archaeologically, apart from its impact on coin production and hoarding (Haselgrove 1984). Conversely, largely because they are recorded, the revolts in the seventy years following the Conquest (eg. Dyson 1975) tend to be overemphasised and were actually relatively few. Pre-Conquest warfare, by contrast, was probably endemic (there may well be substance in Caesar's claim that the Belgae were continuously at war with the trans-Rhenine Germans), but generally went unrecorded. How often, too, were so-called revolts actually purely local disputes sparked off by causes which had little to do with Roman oppression?

In Britain, faunal assemblages at sites in close contact with the Continent show that dietary preferences were already being set along partially Romanized lines amongst the Iron Age élite (King 1984). The same is true of wine consumption. In both Britain and Gaul, such imports probably contributed to the evolution of a structure better capable of supporting Roman colonisation, by fostering pro-Roman attitudes and consolidating the power of those élites with access to imports and stimulating economic intensification to produce the reciprocal exports (Haselgrove 1987). This whole process of 'pre-Romanization' helped set the limits on successful Roman expansionism (cf. Groenman van Waateringe 1980). In Belgic Gaul, Caesar's intervention undoubtedly speeded up these changes, compressing into a few years shifts that might otherwise have taken a generation (Wightman 1985). But in Britain these processes ran a further course,

which undoubtedly contributed to the relatively high level of monetary development and political centralization there by the time of Claudius' invasion (Haselgrove 1988).

The problems mentioned above are compounded by the tendency to attribute to Romanization changes which had little or nothing to do with the Conquest. Often this is due to incomplete evidence or poor dating. It is now clear that a much more significant phase of agricultural innovation in Britain occurred during the later first millennium BC, the Conquest merely adding a range of exotica. While the Roman period certainly saw more effective utilization, and probably some intensification and expansion too, the change is one of degree not kind (Jones 1981). This is almost certainly the case in Belgic Gaul too, although detailed evidence is still required. Many other processes, which originated earlier, such as settlement expansion, probably only become apparent in the Roman period, owing to the greater visibility of the material culture and of the sites. More difficult still to evaluate are changes which occurred in the Roman period in reaction to conditions that began to form earlier: the processes of the 'very long term' (Braudel 1972) such as climatic change, soil degradation or population increase whose effects are cumulative and not felt by individuals or even generations until particular circumstances, such as a series of failed harvests, eventually trigger off an irreversible change, such as the abandonment of upland settlements. Such questions of the 'very long term' deserve consideration alongside those posed by Martin Millett elsewhere in this volume, if our analysis is to be a balanced one.

A number of other difficulties are purely archaeological. These include the relative crudeness of the archaeological timescale and the false conclusions to which this can lead; and the uncertain reliability of much of the older data. Even where plentiful, this was rarely collected systematically with regard to the questions of interest today. The uneven distribution of the archaeological material is also a major problem, systematically underrepresenting certain places and phenomena. Even for such an obvious category as Iron Age hillforts, new examples are still discovered almost yearly in areas of intensive work such as the Ardennes and the Hunsrück-Eifel (Wightman 1985, 18).

We also need to beware of the still widespread attitude that patient accumulation of new evidence, coupled to new analytical techniques and some new interpretation, will in itself eventually overcome these difficulties and bring us closer to understanding Romanization processes. I doubt this is so and propose to examine it further, using

the information on later Iron Age and early Roman sites reported in Gallia between 1970-85.³ As Wightman (1985, 101) reminds us, one question where an archaeological contribution is essential – and can be expected – is the basic interplay between continuity and change in the settlement pattern in the century or so on either side of the Conquest and the ensuing Augustan reorganization. In short, were the same sites occupied? Did the settlement types change? Did the overall pattern of siting and exploitation change significantly and if so, how suddenly? Above all, when did the major changes occur and does the pattern vary between regions?

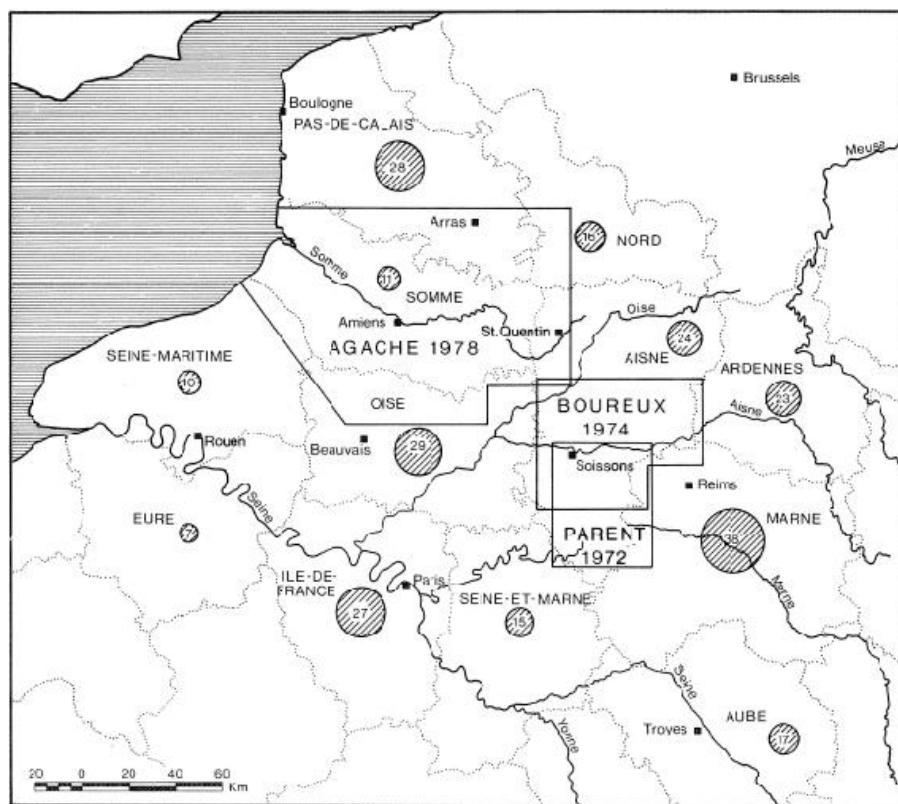


Fig 5.3. Northern France: areas of intensive survey and numbers of excavations on sites of the first centuries BC-AD reported in Gallia 1970-85, by Département.

The pattern of recent archaeological activity in northern France is undeniably variable (fig. 5.3). On the Picardy chalklands, Agache's (1978) internationally acclaimed aerial surveys have transformed our knowledge of the distribution and density of indigenous farmsteads and Gallo-Roman villas alike. Boureux's (1974) work, in the Aisne

Valley has had similar results, reporting site densities around one per square kilometre along the gravel terraces of the river Aisne. Outside these areas, however, a similar depth of coverage is lacking. Systematic ground survey has been even more restricted, an exception being the work of Parent (1972). Although primarily concerned with earlier periods, fieldwork in a 15km radius around Fère-en-Tardenois added 32 Gallo-Roman sites to only 17 known previously, an increase of nearly 200%; a total of 182 Iron Age and Gallo-Roman sites are recorded within his overall study area (Parent 1972). An intensive field survey recently begun in the Aisne Valley (Haselgrove 1989) has so far recorded a density of over 2 Gallo-Roman sites or concentrations per square kilometre walked. Over large areas then, known sites can form only a small proportion of the total, inhibiting discussion of many aspects of settlement pattern and continuity until the rest of northern France has been sampled by comparable ground and aerial surveys.

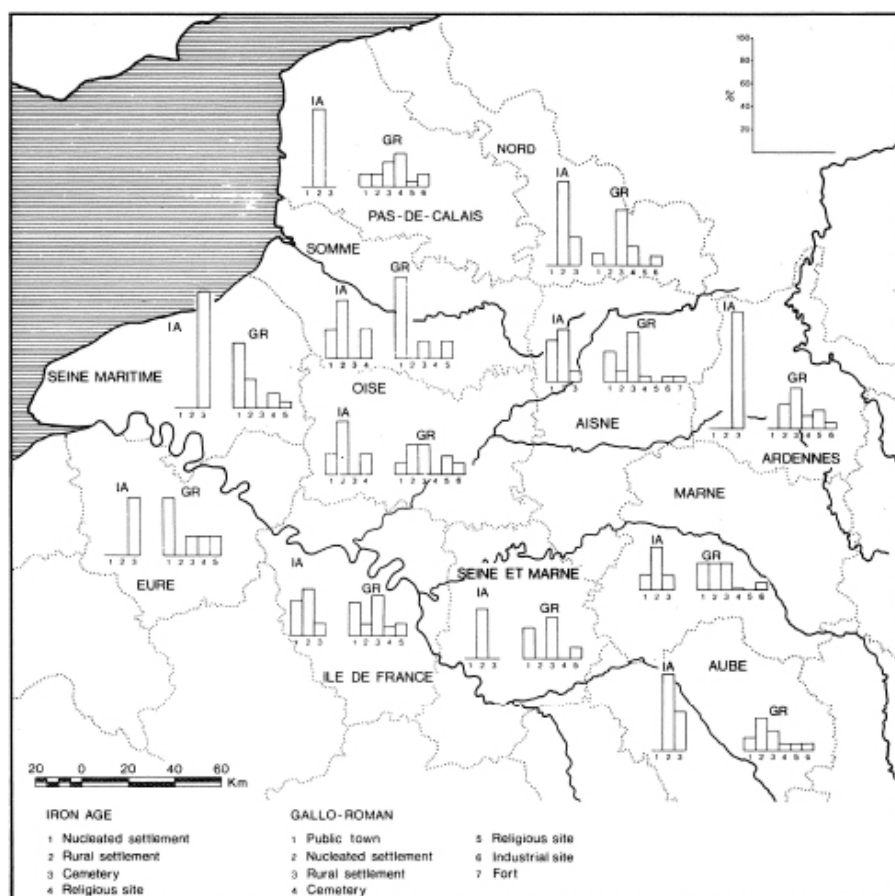


Fig 5.4. Northern France: proportions of excavations on different types of Iron Age and Gallo-Roman sites with occupation of the first centuries BC-AD as reported in Gallia 1970-85, by Département.

Similar imbalances are found with the excavated sites occupied in the first centuries BC and AD (fig. 5.3 above). The overall pattern is dominated by the menace of gravel extraction along the river terraces of the Paris Basin, particularly the Aisne, the Oise and the Marne. With a few exceptions, eg. the late La Tène site at Conchil-le-Temple, Pas-de-Calais (Leman-Delerive and Piningre 1981), extensively excavated rural settlements are confined to this zone. The lack of follow-up to Agache's work in Somme is especially marked. Sites have generally been excavated either on too small a scale to resolve basic problems, eg. Condé-Folie (where a Roman style building with associated late Iron Age pottery lies obliquely across the partition of a typical Iron Age rectilinear enclosure), or not at all, eg. Port-le-Grand (where another Iron Age type enclosure is situated very close to a courtyard villa) (Agache 1978). The average number of sites of all types excavated by modern methods is only 20 per Département, many under far from ideal conditions. The limitations of our database for late Iron Age to Gallo-Roman settlement continuity are obvious.

Breaking the figures down according to the number of recorded excavations on different types of Iron Age and Gallo-Roman site reinforces these biases (fig. 5.4). In some areas such as Upper Normandy, the only excavated late Iron Age sites of known character are funerary. In Ardennes, too, settlement evidence is needed to complement the important cemeteries at Menil-Annelles and Ville-sur-Retourne (Flouest and Stead 1979). Elsewhere, the position is reversed, although there are still disproportionately few excavations on rural sites compared to nucleated settlements, Iron Age as well as Roman. And while modern excavations are transforming our knowledge of religious sites such as Bois l'Abbé, Eu, Gournay-sur-Aronde and Ribemont-sur-Ancre, providing crucial information on the changing ideologies and ritual practices of the transitional period (Brunaux 1986; Roymans 1988), remarkably few early military sites have been excavated anywhere. Overall, then, the pattern of modern excavation is far too variable for the same basic questions to be answered with equal validity from one region to the next, nor does it leave us grounds for much optimism that if we wait long enough, the right sort of data will eventually turn up. If this is to happen, an overall guiding strategy, harnessing regional studies to common aims, is needed (cf. Van Es 1983). Otherwise, the patterns which emerge, especially at a provincial level, are likely to be misleading, however

plausible they may seem on the surface.

Nevertheless, on the assumption that the recently excavated sites provide a reasonably representative sample, we may persist in examining settlement continuity during the first centuries BC and AD. The sites are divided into two non-exclusive groupings, those with Iron Age occupation and those with Gallo-Roman occupation (some sites thus appear in both sets). The question of continuity is framed as follows (fig. 5.5): when, if at all, were sites of the former group abandoned, and when were sites in the latter group first occupied? Although there is no overwhelming trend, some interesting points emerge. Taking the 'Gallo-Roman' group first, the proportion of sites founded between c. AD 25-100 is consistently high (between 50 and 80% for all but one Département), confirming that the later first century AD was a period of particular building activity throughout Belgica (over half of all villas appear to have been built then; Wightman 1985, 105). Many of these sites were apparently new foundations and the total number of establishments probably increased as well. However, we should not overlook the potential bias imparted by this phase being longer and the material being more readily dated, compared to the earlier sites.

Secondly, the overall degree of continuity into the post-Conquest era appears to be small, although detailed case studies would be required to establish whether major or only minor shifts in settlement location and territories were involved. Both groups of sites suggest that the period c. 70-25 BC was one of very considerable change. More Gallo-Roman sites seem to start at this period than either continue from earlier periods, or were founded in the succeeding Augustan age. Yet on the urban evidence, the latter era is often held as a key period of settlement shift (eg. Wightman 1985, 48, 75). Conversely, the proportion of later Iron Age sites abandoned between c. 70-25 BC is also consistently high. However, without more detailed evidence, we must not assume that these changes were due solely to the historical events of the Conquest; there could be other reasons for instability. This particular discontinuity needs viewing in a longer-term perspective of Iron Age settlement development, enabling us to assess the normal rhythms of site continuity and change in the preceding centuries. The pattern also needs breaking down to see what happens with different categories of sites, such as nucleated and single-unit settlements and cemeteries.

Archaeological perspectives 2: population and polity

From questions on which archaeology should have some input, I shall

turn briefly to two matters regarded as fairly intractable: population density and the basis of the Augustan *civitas* boundaries. Several areas show increased numbers of sites in the late Iron Age, eg. the Aisne Valley (Demoule and Ilett 1985). However, it is not realistic to argue a general population increase from this evidence, given the greater ease of discovery of late La Tène settlements as enclosure cropmarks and the more robust and readily diagnostic ceramics of this period compared to earlier. Absolute population densities which use Caesar's figures are similarly guesswork. Even where they supposedly derive from the Helvetii's own register (BG. I, 29), the size of their territory is hypothetical. However, most estimates of the average population densities of different Gaulish groups, based on their fighting strengths given by Caesar, fall within a range of 10-20 individuals per square kilometre, depending on whether a multiplier of 1:4 (as for the Helvetii) or 1:5 is used for the ratio of warriors to the rest of the population. This order of magnitude is commensurate with what is known for Medieval Europe (eg. Pounds 1973).

More information may perhaps be gleaned from the relative strengths of the warrior contingents which the Belgic peoples contributed to their confederate army in 57 BC and to the relief army which Vercingetorix summoned to Alesia in 52 BC (BG. II, 4; VII, 75). Rather than relying on the accuracy of the specific accounts given by Caesar, the standard deviation can be employed as a measure of significant differences. Using Thiessen polygons to predict their territories,⁴ we can then investigate for which peoples Caesar's figures suggest a population density either significantly above or below the mean values for all 11 groups in 57 BC and all 12 in 52 BC.

We lack information on two important peoples, the Remi and the Treveri, and only seven peoples are common to both sets of figures. Even so, the two maps present some interesting comparisons (fig. 5.6). First, the highest densities are consistently found in the north-east of the Paris basin. Secondly, this zone is surrounded (where we have information) by lower than average densities, especially to the north and west. The Menapii in the northern coastlands are unsurprisingly also below the average. Thirdly, the Atrebates and the Morini are consistently within the average band, as were the Nervii in 57 BC. In 52 BC, however, this latter group is included among those who were very significantly below the mean.

Several explanations are possible. Caesar could easily have exaggerated the fighting strength of the Bellovaci and the Suessiones, two of his more formidable opponents. This seems less probable, however, for the Parisii. The north-east of the Paris basin is one of the

richest agricultural areas in France and supported notably high population densities in the fourteenth century AD (Pounds 1973, figs. 6:2, 6:6). This therefore, could well be true of the first century BC. By contrast, a population well below the mean is not unlikely in the chalk areas inhabited by the Ambiani, the Veliocasses and the other groups. If so, the high site densities recorded by Agache (1978) should eventually be surpassed in the area north-east of Paris, which the number of sites now known on the river terraces makes increasingly likely. Alternatively, since the figures used are Caesar's, but the territorial boundaries are probably closer to those finalised in the Augustan reorganization, stronger groups such as the Bellovaci may have lost clients and lands to their weaker neighbours in the meantime – as implied by the creation of the *civitas* of the Silvanectes. If their 'zone of influence' was originally much larger, and the neighbouring territories rather smaller, their population densities will be reciprocally distorted, the former upwards, the latter downwards. It is tempting to suggest that the downturn in the status of the Nervii bears out the very high casualties which Caesar claims to have inflicted on them in 57 BC (BG. II, 28).

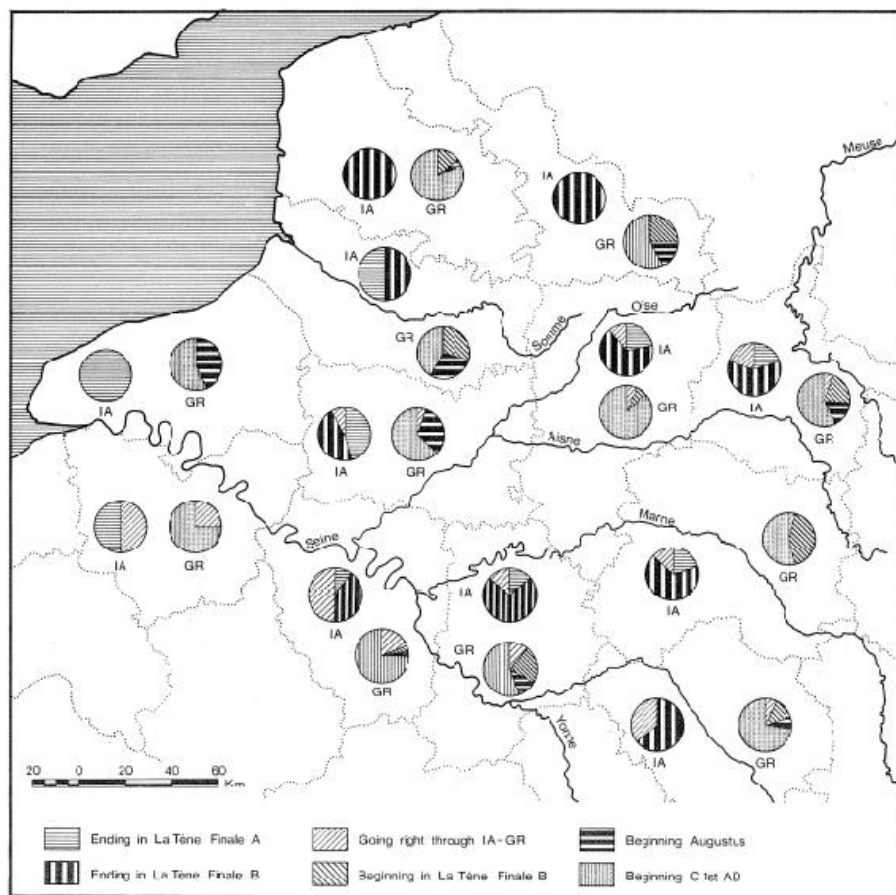


Fig 5.5. Northern France: site continuity in the first centuries BC-AD based on excavations reported in *Gallia* 1970-85; (1) as proportions of Iron Age sites; (2) as proportions of Gallo-Roman sites, by Département.

The archaeological ideal of analysing Romanization in the longer timescale of 'groups and groupings' is in practice difficult to implement. Study of spatial variation in later Iron Age material culture assemblages in northern France has yet to proceed much beyond the definition of major regional differences (eg. Duval 1976; 1984). Focussing on the peoples we know from later boundaries imposed by Rome will inevitably cross-cut some significant pre-existing divisions in society and arguments from coin distributions are, in practice, almost circular (Haselgrove 1988). One possible approach to the underlying rationality of the Roman administrative decisions is to compare the 'known' *civitas* boundaries with those predicted under certain conditions, by extending an earlier analysis of the Low Countries frontier zone (Bloemers 1983) and tracing a Thiessen polygon around the administrative focus of each *civitas* to define its

‘sphere of influence’. In Belgic Gaul, the ‘known’ boundaries, as inferred from the pre-1792 diocesan territories, are, of course, widely assumed to be mainly artificial Roman impositions (Nash 1978; Rice-Holmes 1911; above).

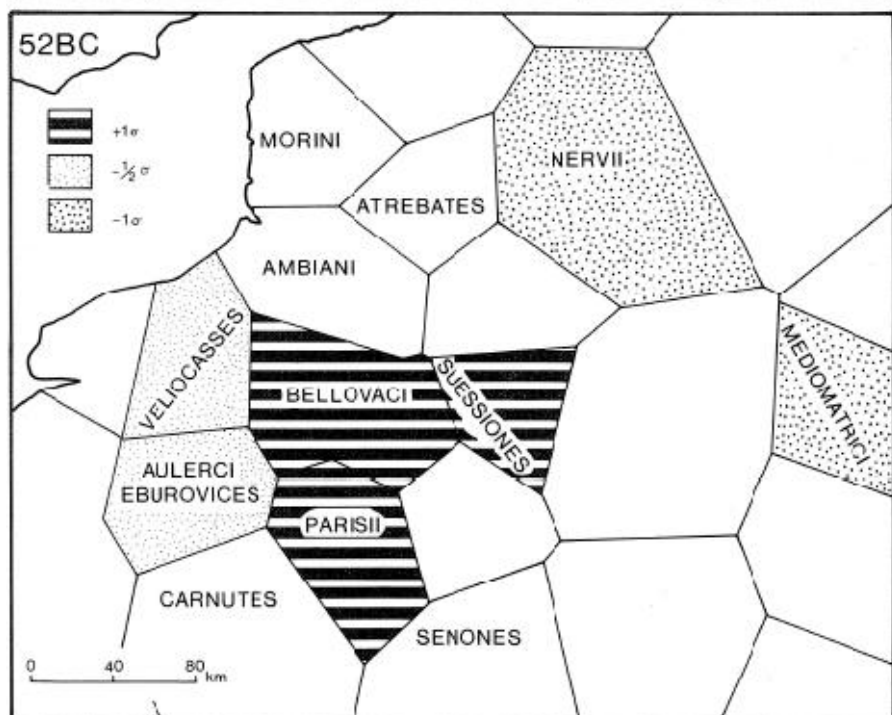
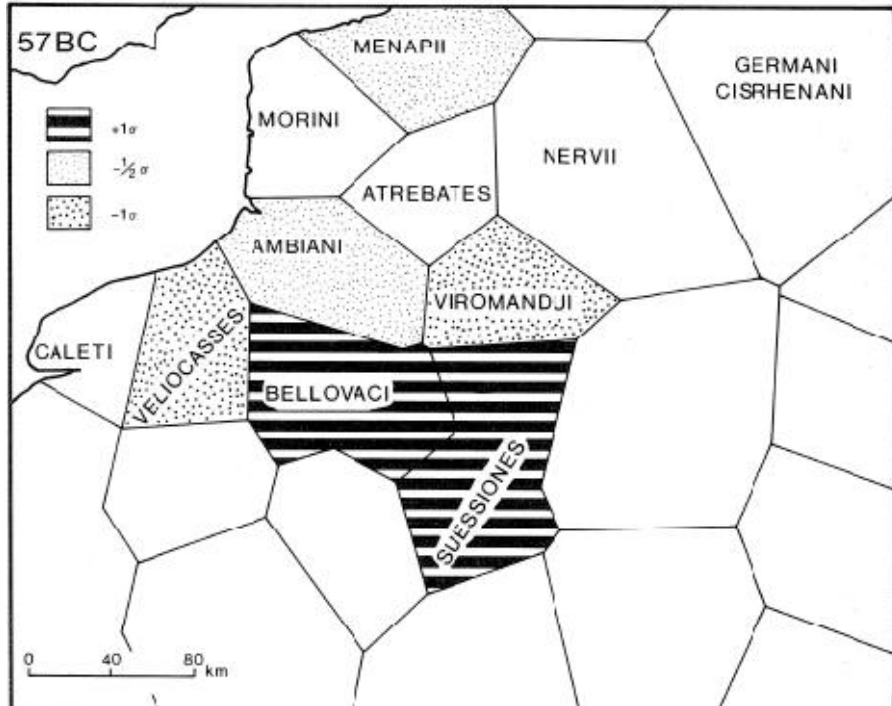


Fig 5.6. Inferred relative population densities in parts of Belgic Gaul in 57 and 52 BC based on figures given by Caesar (BG. II, 4; VII, 75); data for named groups only.

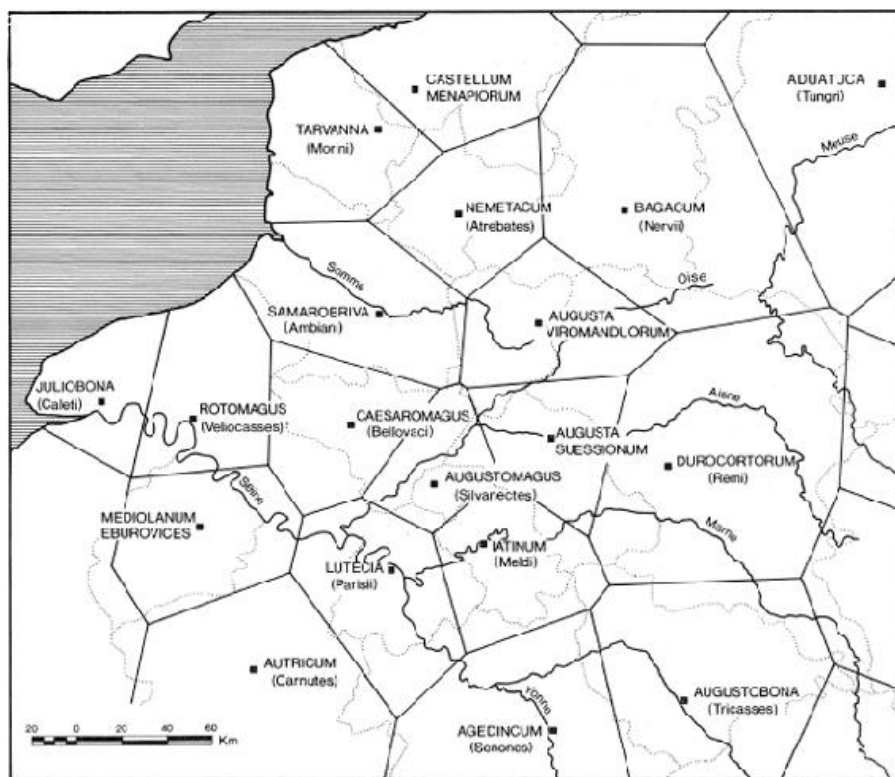


Fig 5.7. Northern France: comparison of *civitas* boundaries predicted from Thiessen polygons (after Bloemers, 1983, extended) and reconstructed from late Roman diocese boundaries (after Rice-Holmes, 1911).

The results of this exercise show a very reasonable goodness of fit (fig. 5.7). As expected, the fit is particularly strong in the areas inhabited by groups whose level of political integration was manifestly weak, such as the Morini and the Menapii (cf. Roymans, 1983). Equally, the *civitates* of 'Belgium' are noticeably smaller than their neighbours to the south and east. This suggests that we may indeed be dealing with the leading sub-units of a wider cultural or ethnic grouping, with some capacity for common action at this higher level of inclusion. The persistence of these subdivisions even into the modern Département boundaries is striking – the Ambiani, for example, coincide almost exactly with Somme (cf. fig. 5.2 above), the Bellovaci and Silvanectes together with Oise, and so on.⁵ It may therefore be worth exploring whether natural geography, through its influence on regional settlement patterns, was a major factor in the

emergence of basic group identities in 'Belgium'.

Significant disagreements between 'expected' and the 'observed' territories are relatively few. The over-representation of the Nervii at the expense of the artificially created *civitas* Tungrorum may be linked to the Roman resettlement of the left-bank Germans. Their territory also included a large expanse of the inhospitable Ardennes. Similarly, the vesting of the loyal Remi with extra clients and lands at the end of the Gallic War must explain their enormous, but still under-represented, territory. A reason for the over-representation of some smaller groups, eg. the Silvanectes or the Viromandui, is harder to give, but must reside in the mode and chronology of territorial allocation.

The close correspondence between the hypothetical polygons and the actual boundaries implies that the location of the administrative centres, rather than the territories of the eponymous groups, was the main determinant in the formation of the *civitates*. What determined the *civitas* to which the population of a particular area belonged was the nearest administrative centre. This makes sense. The city in the Roman world was the *civitas* (Mann 1960), and its citizens derived their identity from this rather than from the territory they inhabited. At the time of the Augustan reorganization, the eventual physical centres of the different *civitates* varied considerably in form. Some were still-occupied native centres, like Vermand which was later replaced by a completely new foundation at St Quentin a few kilometres away. Some, like Reims, were possibly Conquest period foundations. Others were or had been important military sites, eg. Agedincum and Samarobriva, the latter also apparently a native focus of importance, though not necessarily a major settlement. All these sites were almost certainly in some way focal to the élite control and administration of the communities with which they came to be identified. Their frequently asymmetrical location within the *civitas* suggests that it is from their relative spacing that the territorial boundaries followed. If it had been the other way around, one would expect the locations selected for the administrative foci to have been more central to the territories.

There are two possible explanations for the *civitates* with territories much smaller than the settlement geography predicts. Some, like the Silvanectes, may be secondary creations, detached from their larger neighbours, the Bellovaci, after the first stages of the Augustan reorganization had already been completed. Others were presumably formerly independent peoples, like the Suessiones, who were temporarily placed under the control of the Remi, losing dependents

and land in the process, and only now made responsible for their own affairs. The association of Augustus placenames with several of these smaller *civitates*, as at Senlis, St Quentin and Soissons, is a further indication that there was more than one stage in the organization of the Belgic *civitates*. Although both St Quentin and Soissons are apparently successors to nearby Iron Age sites (one of which was itself a Noviodunum), their wholly Romanized names contrast markedly with the public towns of probable primary *civitates* which are either wholly native or belong to an early stage of the Roman occupation, like Beauvais (Caesaromagus).

Conclusions: Romanization in the Aisne Valley, a case study

The Aisne Valley region of southern Picardy has already been mentioned several times due to the intensity of recent archaeological work there, both aerial survey (Boureaux 1974) and large-scale rescue excavations on the river gravels (Demoule and Ilett 1985), including those on the remarkable late La Tène nucleated settlements at Condé-sur-Suippe and Villeneuve St Germain. The area is largely agricultural today and spans the geological transition from the rolling chalklands of Champagne in the east to the limestone plateau and river valleys of the Paris basin in the west (fig. 5.8). The “Limon” soils of the plateau are more fertile but also much harder than those of the valley bottoms. Archaeologically, the area effectively provides a transect c. 50 x 25 km running between the central places (Iron Age and Roman) of the *civitates* of the Remi and the Suessiones, with their initially contrasting attitudes to Rome (BG. II, 4). Excavations on rural sites, including the author’s on an Iron Age and Gallo-Roman establishment at Beaurieux, Les Grèves (Haselgrove, forthcoming b) and intensive fieldwalking are now offsetting the earlier bias to the major centres and the river gravels, permitting the relationships between different components of the settlement pattern to be assessed: urban and rural; Iron Age and Roman; valley, slope and plateau. The area is thus well placed for evaluating some of the questions about Romanization set out elsewhere (Millet, this volume).

One controversial subject is the chronology of the later phase of the late La Tène period in the region. There is disagreement over the dating of virtually every category of evidence which would normally be helpful, eg. bronze coinage, fibulae, etc. (cf. Buchsenschutz 1981) and crucially, whether or not their appearance pre-dates Caesar’s

intervention (eg. Debord 1984; Fleury 1986). In fact, notwithstanding the numismatist's arguments (eg. Scheers 1977), the excavations at Condé-sur-Suippe leave little doubt that potin coinage had achieved widespread circulation in the region by the earlier first century BC (cf. Massy 1983), with the implications this has for the rest of the dating. The view adopted here is that the final phase of the late La Tène period – defined by the appearance *inter alia* of the Dressel IB Italian amphora form, high quality wheelmade pottery and certain fibula types (eg. the Almgren 65, Spoonbow and Arched forms; Fleury 1986) – most probably occupies the period c. 75/65–30/20 BC, when Arretine and the first North French Gallo-Belgic wares appear. Sites with this material may therefore pre-date Caesar, but precise dating will have to await seriation studies of the settlement finds.

Roman military presence in the region may be disposed of rapidly. The large legionary fortress at Mauchamp, situated opposite Condé-sur-Suippe, thought Caesarian by Napoleon III, has *claviculae* at the entrances, pointing to a later date. There are, however, also surface finds of Dressel IB amphorae from the site. The successive Tiberian and Flavian forts at Arlaines just west of Soissons are plausibly linked to the revolts of AD 21 and 69 (Wightman 1985). Otherwise we are reduced to seeking Roman military installations in the orthogonal layout of the implanted valley-bottom sites such as Villeneuve St Germain (Debord 1982) or the quartering of troops in existing native fortifications (cf. Todd 1985), as Caesar certainly did (BG. VIII, 5). One possible candidate is the promontory fort at Pommiers, near Soissons, where vast quantities of Italian Dressel IB, and also probably Spanish, amphorae are present. The Liercourt-Erondelle cropmarks (Agache 1978) suggest an annexe as an alternative interpretation of the external features, which Vauvillé (1903-4) claimed as Caesarian siegeworks (cf. BG. II, 12).

At Reims, the recently excavated timber buildings of later first century BC date aligned on the street grid (Neiss 1985) have a rather military appearance, postdating an earlier, probably mid first century BC, occupation attested by pits and wells. It is still uncertain to which phase the earliest fortification relates. This is a sub-oval ditched enclosure of c. 110 ha extent of first century BC date (Neiss 1984) and itself apparently integrated with the main Trier and Lyons roads. Reims could therefore represent either a Roman fortress or another orthogonally laid-out native settlement like Condé-sur-Suippe and Villeneuve. But there is as yet no firm evidence for military activity at Reims and we must avoid invoking a hypothetical military presence in native fortifications as a stimulus to post-Conquest urbanization (cf.

Wightman 1977). At Reims, the streets associated with the early timber buildings were transformed into roads and regularly remetalled from the early first century AD onwards and there was also a slight change in orientation. A second massive ditched enclosure, which predates the mid first century AD (Neiss 1984) is presumably linked to the status of the Remi as a *civitas foederata*.

The large valley-bottom settlements at Condé-sur-Suippe and Villeneuve are widely taken to signify the development of a more complex and hierarchial settlement pattern in the first century BC and thus a genuine step toward urbanization (Demoule and Ilett 1985; Fleury 1986). Their strict orthogonal layouts and functional division into living areas, workshops and agricultural zones reflects a high level of organization. Productive activities attested include metalworking and minting (Debord 1982) and the preparation of skins and pelts of wild animals (Meniel 1987). The high proportion of pig, a feature of late Iron Age faunal assemblages in Belgic Gaul (Meniel 1987; cf. King 1984) has been linked to the well attested export of Gallic salted pork to Italy (Strabo, Geography IV, 4, 3; cf. Demoule and Ilett 1985). Both sites were consuming large quantities of Roman imports. Recent work on the Villeneuve amphorae (Devos 1986) even suggests the possibility of identifying particular consignments and following their fate within the settlement. Neither site, however, was long-lived, although the most recent excavations at Condé-sur-Suippe have revealed a shadowy second phase restricted to part of the site (P.Pion, pers. comm.). Even so, the total period of occupation is unlikely to have been much more than a generation. Both sites, in some sense, must represent implanted settlements on open land, arguably amounting to little more than the concentration of a series of activities previously dispersed across the landscape into a new, organized and spatially confined setting. The degree of zoning need not differ greatly from that apparent in extended late Hallstatt – early La Tène agglomerations such as Berry-au-Bac, le Vieux Tordoir, which subsequently disappeared.

The relationship of the valley bottom sites to late La Tène plateau fortifications such as Pommiers and St Thomas is complicated by our limited knowledge of the latter sites, derived largely from older excavations. Debord (1984) has suggested that Villeneuve represents an intermediate, post-Conquest stage in a move down from Pommiers to the new foundation of Augusta Suessionum (Soissons), but there are indications of a more complex relationship. Villeneuve St Germain may begin rather earlier than Debord allows, possibly even before the Conquest, while there is certainly later first century BC material from

Pommiers and the recent excavations by URA 12 suggest two distinct phases of activity (P.Brun, pers. comm.). The nineteenth century excavation plan of Pommiers suggests that the excavator, Vauvillé (1903-4) followed a series of linear features, which were almost certainly ditches forming a cruciform arrangement similar to that at Villeneuve (eg. Debord 1984). If so, this implies a comparable spatial organisation and a further link between the two sites. Most of the coins from the Pommiers ditches are inscribed struck bronzes, some of which are certainly post-Conquest (eg. Scheers 1977, 153), suggesting a relatively late date for their infilling – later, in fact, than the equivalent cruciform arrangement at Villeneuve. The question thus becomes not so much whether Villeneuve and Pommiers overlap, but rather for how long, which began the earlier, and what was the nature of the post-Conquest occupation of Pommiers, which has Augustan material, whereas Villeneuve was certainly abandoned by c. 30 BC. There is no way of knowing whether there were links between St Thomas and Condé-sur-Suippe, 13 km apart, or between the abandonment of the latter site (otherwise known as Vieux-Reims) and the foundation of Reims 20 km to the south of it.

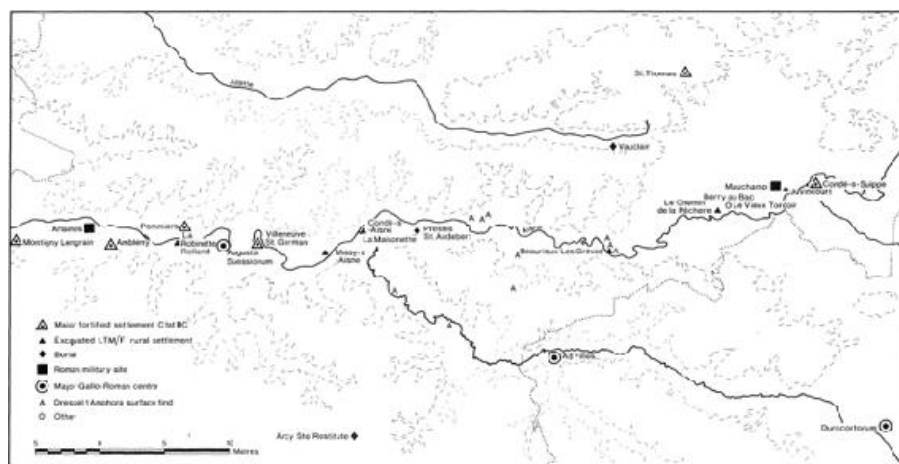


Fig 5.8. The Aisne Valley region, showing the principal sites mentioned in the text.

Demoule and Ilett's (1985) view that there was only a limited (re)occupation of the limestone plateau in the late Iron Age, linked to the foundation of defended sites like Pommiers, and that full exploitation of the plateau soils did not occur until the Gallo-Roman period, increasingly needs qualification. Recent fieldwalking implies

that this process was underway by the later Iron Age (Haselgrove, 1989). Indeed given favourable climatic conditions and the availability of a mature iron technology and suitable crop species (cf. Jones 1981), the strong, fertile soils of the plateau were surely being exploited by this period, even if the settlements themselves avoided the exposed plateau top (as they do today) in favour of the more sheltered plateau margins and slope locations. Overall, however, the rural settlement record of the first century BC is essentially one of discontinuity. Most sites occupied early in the later Iron Age appear to be open settlements, eg. Berry-au-Bac, Le Chemin de la Pêcherie and Juvincourt, whereas large rectilinear ditched enclosures are a prominent feature of sites established in the closing stages of late La Tène, eg. at Condé-sur-Aisne, La Maisonette and Missy-sur-Aisne, Les Gardots.

At Beaurieux, Les Grèves, an earlier open settlement was succeeded, in or soon after the mid first century BC, by a large rectilinear ditched enclosure, probably following a short interruption. Several large timber buildings, sited close to the enclosure ditch, were grouped around a central space in a manner which strikingly anticipates the great courtyard villas of the Somme (cf. Agache 1978; Blagg, this volume). The internal organization of the enclosure at Missy-sur-Aisne may well have been similar (Haselgrove, forthcoming b), suggesting that an ordered layout was as much a feature of rural sites of the period, as of the large nucleated settlements. Between the open and enclosed settlement phases, the Beaurieux faunal assemblage shows a shift from pig to greater emphasis on cattle and sheep. The (earlier) Condé-sur-Suippe and (later) Villeneuve faunal assemblages change similarly in emphasis (cf. Meniel 1987), so the shift may well be chronological. Late in the first century BC, the rectilinear enclosure at Beaurieux was remodelled and reduced in size, apparently as part of a wider landscape reorganization.

The evidence such as we have suggests considerable instability in the first century BC settlement pattern, evinced both by the short-lived fortified nucleations and by the rural sites, some of which were abandoned for good, some reoccupied after a short break and still others, completely new foundations. These latter share with the major sites their organized layouts. Two of these certainly, and Pommiers and Reims possibly, look like implanted settlements, and the lack of any indications to the contrary, such as evidence of more gradual growth, is striking. Overall, a 'crisis' model, such as Collis' (1985, 83-5) of settlement centralization during a period of sustained military or socio-economic stress, offers a far better fit to this data, than the

more conventional model of an evolving settlement hierarchy. This view would link the foundation of the fortified settlements such as Villeneuve St Germain to the abandonment of many of the rural settlements during a period of sustained crisis, the population subsequently dispersing back to the land when this was over, or moving to other nucleated settlements that replaced them. The Roman invasion alone cannot have sparked off this process in the Aisne Valley, since Condé-sur-Suippe at least was founded well before this date. Subsequently, it may, however, have contributed in one of two ways. By prolonging the period of stress, Caesar's intervention may have laid the foundation for more fundamental changes in the settlement pattern, and a move to greater nucleation. Conversely, the *pax Romana* may have made its mark by bringing the emergency to a close and thus enabling what was by inclination still an essentially rural population to return to their lands sooner than would otherwise have been the case.

The increase in the range and quantity of Roman goods reaching the region in the later first century BC has already been discussed (cf. Haselgrove 1987). This influx (along with warrior service in Roman rather than native armies and increasingly making and receiving payments in Romanized coin) was presumably the major Roman impact on most of the Belgic populations until well into the first century AD. In some ways, burials such as Presles St Audebert, like those at Goeblingen-Nospelt (Thill 1967), demonstrate just how quickly the Belgic élites did become integrated into Roman ways, but in other respects no more than continue pre-Conquest trends. The nature of the coinage did evolve rapidly, but this is exceptional (Haselgrove 1984). Several other changes probably had little or nothing to do with the Conquest. This should not surprise us. Rome's aim was to rule newly conquered peoples with the minimum of effort, not to Romanize them; if it had been, she would surely have gone about it rather differently.

Notes

1 "During the winter which he spent in Belgic Gaul Caesar made it his single aim to keep the tribes loyal, and to see that none had any pretext for revolt or any hope of profiting by it...so he made their condition of subjection more tolerable by addressing the tribal governments in complimentary terms, refraining from the imposition of any fresh burdens, and bestowing rich presents upon the principal citizens. By these means it was easy to induce a people exhausted by so many defeats to live at peace." (Translation Handford, 1951, 260).

2 This argument need not be taken as far as eg. Demangem (1905). He

envisaged all the Belgic peoples inhabiting circumscribed areas separated from each other by dense forests, one group – the Morini – actually dwelling within them. It is, however, probably true that the areas of the most fertile soils exploitable with the climate and technology of the time will have supported appreciably larger populations than the rest. Caesar's figures for the settlements and population of the Helvetii (BG. I, 5, 29), who were circumscribed by mountains on all sides, and Iron Age settlement evidence elsewhere suggest this was equally true of the rich agricultural plains of eastern and central Gaul, eg. in the Auvergne plain compared to the surrounding uplands, which as today will have been more sparsely populated (Woolf, 1988).

3 The figures included in *Gallia*, although reasonably comprehensive, are not complete. The compilations are non-standard and not all the relevant sites are necessarily reported. In addition, some sites have had to be omitted here as there was insufficient information about their precise date, while some multi-period sites with first centuries BC-AD occupation which fell within the remit of the Direction des Antiquités Préhistoriques will have been reported in *Gallia Préhistorique*, which was not consulted. In most cases, however, there is no reason why the excavations reported in *Gallia* should not be fairly representative of the overall pattern of excavations in each Département.

4 An analysis using *civitas* boundaries derived from the pre-1792 Diocesan boundaries gives a virtually identical result. The Meldi are included with the Suessiones for 57 BC, but not for 52 BC, as they are generally believed to have gained their independence in the intervening years, following the Roman defeat of their paramours (eg. Scheers, 1977).

5 Further examples are the Suessiones and the Viromandui (Aisne), the Atrebatas and the Morini (Pas-de-Calais), the Caleti and the Veliocasses (Seine-Maritime) and the Auleri Eburovices (Eure).

Bibliography

- Agache, R. 1978 *La Somme Pré-Romaine et Romaine*. Amiens.
- Bayard, D. and Massy, J-L. 1983 *Amiens romain*. (Rev. Archéol. de Picardie Num. Spéc.) Amiens.
- Berger, L. and Furger-Gunti, A. 1981 'Les sites de l'usine à gaz et de la colline de la cathédrale à Bâle' in O. Buchsenschutz (ed.) *Les structures d'habitat à l'âge du fer en Europe tempérée*, 173-86. Paris.
- Bloemers, J.H.F. 1983 'Acculturation in the Rhine/Meuse basin in the Roman period: a preliminary survey' in Brandt and Slofstra (eds.) 1983, 159-209.
- Bloemers, J.H.G. 1988 'Periphery in pre- and protohistory: structure and process in the Rhine-Meuse basin between c. 600 BC and 500 AD' in Jones *et al.* (eds.) 1988, 11-35.
- Boureux, M. 1974. *Prospections aériennes dans l'Aisne en 1974: Laonnois, Soissonais et Tardenois*. Laon.
- Brandt, R. and Slofstra, J. (eds.) 1983 *Roman and native in the Low Countries* (Brit. Archaeol. Rep. S184). Oxford.
- Braudel, F. 1972. *The Mediterranean and the mediterranean world in the age of Philip II*. London.
- Brunaux, J-L. 1986 *Les Gaulois: sanctuaires et rites*. Paris.

- Buchsenschutz, O. 1981 'L'apport des habitats à l'étude chronologique du premier siècle avant JC' in *L'Âge du Fer en France septentrionale* (Mém. Soc. Archéol. Champenoise 2): 331-8.
- Buchsenschutz, O. 1984 *Structures d'habitats et fortifications de l'âge du Fer en France septentrionale* (Mem. Soc. Préhist. Française 18).
- Buchsenschutz, O. and Ralston, I.B.M. 1986 'En relisant la Guerre des Gaules', *Rev. Aquitania Suppl.* 1, 383-7.
- Buchsenschutz, O. and Ralston, I.B.M. 1987 'Reflexions sur l'économie de la Gaule d'après César et les données archéologiques' in *Mélanges offerts au docteur J-B Colbert de Beaulieu*. Paris.
- Burnham, B. 1986 'The origins of Romano-British small towns' *Oxford J. Archaeol.* 5 (2), 185-203.
- Champion, T.C. 1980 'Mass migration in later prehistoric Europe' in P.Sorbom (ed.) *Transport, technology and social change*, 32-42. Stockholm.
- Chossenot, M. 1987 'Contribution à l'étude des monnaies Gauloises; les fouilles de la Cheppe, Camp de Mourmelon (Marne) in J-L.Brunaux and K.Gruel (eds.) *Monnaies découvertes en fouilles* (Dossiers de Protohistoire 1), 55-62. Paris.
- Colin, A. 1984 'Préliminaires à une étude chronologique des oppida au premier siècle avant JC' in *Recherche sur la naissance de l'urbanisation au premier siècle avant JC dans le Centre de la France*, 154-168. Paris.
- Collis, J. 1985 *Oppida: Earliest towns north of the Alps*. Sheffield.
- Collis, J. 1987 'Celtic Europe before the Romans' in J.Wacher (ed.) *The Roman World*, 15-37. London.
- Crawford, M. 1985 *Coinage and money under the Roman Republic*. London.
- Crumley, C. 1987 'Celtic settlement before the Conquest: the dialectics of landscape and power' in C.Crumley and W.Marquardt (eds.) *Regional dynamics: Burgundian landscapes in historical perspective*, 403-429. New York.
- Debord, J. 1982 'Premier bilan de huit années de fouilles à Villeneuve St.Germain (Aisne)' *Rev. Archéol. de Picardie* (No. Spécial Vallée de l'Aisne), 213-264.
- Debord, J. 1984 'Les origines gauloises de Soissons: oscillation d'un site urbain' *Rev. Archéol. de Picardie* 3-4, 27-40.
- Demangem, A. 1905 *La Picardie*. Paris.
- Devos, M-F. 1986 Essai d'analyse spatiale à partir de l'étude des amphores d'un site de la Tène tardive: Villeneuve St Germain (Aisne, France). (Mémoire de DEA, Université de Paris X).
- Demoule, J-P. and Ilett, M. 1985. 'First millennium settlement and society in northern France: a case study from the Aisne Valley' in T.C.Champion and J.V.S. Megaw (eds.) *Settlement and Society: aspects of West European prehistory in the first millennium BC*, 193-221. Leicester.
- Drinkwater, J.F. 1983 *Roman Gaul*. London.
- Duval, A. 1976 'Aspects de La Tène moyenne dans le Bassin Parisien' *Bull. Soc. Préhist. Française* 73, 457-84.
- Duval, A. 1984 'Regional groups in Western France, in Macready and Thompson (eds.) 1984, 78-91.
- Dyson, S. 1975 'Native revolt patterns in the Roman Empire' *A.N.R.W.* II, 3, 138-75.
- Earle, T.K. 1987 'Chiefdoms in archaeological and ethnohistorical perspective' *Ann. Rev. Anthropol.* 16, 279-308.
- Fitzpatrick, A.P. 1985 'The distribution of Dressel 1 amphorae in north-west Europe' *Oxford J. Archaeol.* 4 (3), 305-340.
- Fleury, B.1986 'Late Iron Age chronology in the light of new material from the

- Aisne Valley (Northern France)' *Bull. Inst. Archaeol. Lond.* 23, 29-46.
- Flouest, J.-L. and Stead, I.M. 1977 'Une tombe de la Tène III à Hannogne, Ardennes' *Mém. Soc. Agric. Comm. Sci. Arts Marne* 92, 55-72.
- Flouest, I.-L. and Stead, I.M. 1979 *Iron Age cemeteries in Champagne: the third interim report*. (Brit. Mus. Occ. Paper 6). London.
- Gechter, M. 1979 'Die Anfänge des Niedergermanischen Limes' *Bonner Jahrbücher* 179, 1-129.
- Gechter, M. and Kunow, J. 1986 'Zur ländlichen Besiedlung des Rheinlandes im römischer Zeit' *Bonner Jahrbücher* 186, 377-396.
- Groenman van Waateringe, W. 1980 'Urbanisation and the north-west frontier of the Roman Empire' in W.S.Hanson and L.J.F.Keppie (eds.) *Roman Frontier Studies* 1979 (Brit. Archaeol. Rep. S 71), 1037-1044.
- Hachmann, R. 1976 'The problem of the Belgae seen from the Continent' *Bull. Inst. Archaeol. Lond.* 13, 117-137.
- Handford, S. A. 1951 *Caesar: the conquest of Gaul*. Penguin translation, London.
- Haselgrove, C.C. 1984 'Warfare and its aftermath as reflected in the precious metal coinage of Belgic Gaul' *Oxford J. Archaeol.* 3, 81-105.
- Haselgrove, C.C. 1987 'Culture process on the periphery: Belgic Gaul and Rome during the late Republic and early Empire' in M.Rowlands, M.Larsen and K.Kristiansen (eds.) *Centre and Periphery in the ancient world*, 104-124. Cambridge.
- Haselgrove, C.C. 1988 'Coinage and complexity: archaeological analysis of socio-political change in Britain and non-Mediterranean Gaul during the later Iron Age' in D.Blair Gibson and M.Geselowitz (eds.) *Tribe and polity in late prehistoric Europe*, 69-96. New York.
- Haselgrove, C.C. 1989 'Fieldwork in the Aisne Valley 1988', *Archaeol. Reports Univ. Durham and Newcastle* 12, 21-28. Durham.
- Haselgrove, C.C. forthcoming (a) 'The Aisne Valley and the Mediterranean during the La Tène Iron Age', in A. Duval *et al.* (eds.), *Vix et l'Âge du fer*, Paris.
- Haselgrove, C.C. forthcoming (b) 'Later Iron Age settlement in the Aisne Valley: some current problems and hypotheses', in *Actes du XIIe colloque de l'AFEAF, tenu à Quimper*.
- Hawkes, C.F.C. 1968 'New thoughts on the Belgae' *Antiquity* 42, 6-16.
- Hopkins, K. 1980 'Taxes and trade in the Roman Empire (200 BC – AD 400)' *J Roman Studies* 70, 101-125.
- Jones, M.K. 1981 'The development of crop husbandry' in M.Jones and G.Dimbleby (eds.) *The environment of man* (Brit. Archaeol. Rep. 87), 95-127. Oxford.
- Jones, R.F.J., Bloemers, J.H.F., Dyson, S.L. and Biddle, M. (eds.) *First millennium papers* (Brit. Archaeol. Rep. S401). Oxford.
- King, A. 1984 'Animal bones and the dietary identity of military and civilian groups in Roman Britain, Germany and Gaul' in T.F.C.Blagg and A.C.King (eds.) *Military and civilian in Roman Britain* (Brit. Archaeol. Rep. 136), 187-217. Oxford.
- Leman-Deliverie, G. and Piningre, J.-F. 1981 'Les structures d'habitat du deuxième âge du Fer de Conchil-le-Temple (Pas de Calais). Premiers resultats' *Mém. Soc. Archéol. Champénoise* 2, 319-330.
- Macready, S. and Thompson, F.H. 1984 *Cross-channel trade between Gaul and Britain in the pre-Roman Iron Age* (Soc. Antiq. Lond. Occ. Paper (N.S.) 4). London.
- Mangard, M. 1982 'L'inscription dédicatoire du théâtre du Bois L'Abbé à Eu (Seine Maritime)' *Gallia* 40, 35-51.

- Mann, J.C. 1960 'Civitas: another myth' *Antiquity* 34, 222-223.
- Mann, M. 1986 *The sources of social power, vol I*. Cambridge.
- Massy, J-L. 1980 'Les origines d'Amiens. Essai de chronologie d'après les découvertes de céramiques arélines' *Cahiers Archéol. de Picardie* 7, 115-136.
- Massy, J-L. 1983 'Informations archéologiques: Circonscription de Picardie' *Gallia* 41, 231-261.
- Meniel, P. 1987 *Chasse et élevage chez les Gaulois*. Paris.
- Metzler, J. and Weiller, R. 1977 'Beiträge zur Archäologie des Titelbergs' *Publ. de la Section Historique de l'Institut du Grand Duché de Luxembourg* 91, 17-187. Luxembourg.
- Nash, D. 1976 'The growth of urban society in France' in B.Cunliffe and T.Rowley (eds.) *Oppida: the beginnings of urbanisation in barbarian Europe* (Brit. Archaeol. Rep. S 11), 95-133. Oxford.
- Nash, D. 1978 'Territory and state-formation in Central Gaul in D.Green, C.Haselgrove and M.Spriggs (eds.) *Social organisation and settlement* (Brit. Archaeol. Rep. S 47), 455-475. Oxford.
- Nash, D. 1984 'The basis of contact between Britain and Gaul in the late pre-Roman Iron Age', in Macready and Thompson (eds.) 1984, 92-107.
- Neiss, R. 1984 'La structure urbaine de Reims antique et son évolution du Ier au IIIe siècle ap. JC' *Rev. Archéol. de Picardie* 3-4, 171-191.
- Neiss, R. 1985 'Informations archéologiques: Circonscription de Champagne-Ardenne' *Gallia* 43, 357-374.
- Parent, R. 1972. 'Le peuplement préhistorique entre la Marne et l'Aisne (2)' *Travaux de l'Institut d'Art Préhistorique* 14, Université de Toulouse-le-Mirail.
- Peyre, C et al. 1987 'Les fouilles du Mont Beuvray: rapport biennal 1984-1985' *Rev. Archéol. de l'Est et du Centre Est* 38 (3-4), 285-300.
- Pounds, N.J.G. 1973 *An historical geography of Europe 450BC-AD 1330*. Cambridge.
- Ralston, I.B.M. 1984 'Les caractères de l'habitat à la Tène III: les structures urbaines et leurs correspondances avec les entités politiques' in *Recherche sur la naissance de l'urbanisation au Ier siècle avant JC dans le Centre de la France*, 169-198. Paris.
- Reding, L. 1972 *Les monnaies gauloises du Titelberg*: Luxembourg.
- Rice-Holmes, T. 1911 *Caesar's conquest of Gaul*. Oxford.
- Rowlett, R.M., Thomas, H.L., Sander-Jorgensen Rowlett, E., and Stout, S.D. 1972 'Stratified Iron Age house floors on the Titelberg, Luxembourg' *J.Field Archaeol.* 9, 301-12.
- Roymans, N. 1983 'The north Belgic tribes in the first century BC: a historical-anthropological perspective' in Brandt and Slofstra (eds.) 1983, 43-69.
- Roymans, N. 1988 'Religion and society in late Iron Age northern Gaul' in Jones et al (eds.) 1988, 55-71.
- Roymans, N. and van der Sanden, W. 1980 'Celtic coins from the Netherlands and their archaeological context' *BROB* 30, 173-254.
- Scheers, S. 1977 *Traité de numismatique celtique II: la Gaule Belgique*. Paris.
- Thill, G. 1967 'Ausgrabungen bei Goeblingen-Nospelt' *Hémecht*, 18, 483-91.
- Todd, M. 1985 'Oppida and the Roman army. A review of recent evidence' *Oxford J. Archaeol.* 4 (2), 187-199.
- Tchernia, A. 1983 'Italian wine in Gaul at the end of the Republic' in P.Gamsey, K.Hopkins, C. R.Whittaker (eds.) *Trade in the ancient economy*, 87-104. London.
- Van Es, W.A. 1983 'Introduction' in Brandt and Slofstra (eds.) 1983, 1-10.
- Vauvillé, O. 1903-4 'L'enceinte de Pommiers' *Bull. Soc. Archéol. Hist. Sci. de Soissons*

(Sér. 3) 12, 321-361.

Walthew, C.V. 1982 'Early Roman town development in Gallia Belgica: a review of some problems' *Oxford J. Archaeol.* 1 (2), 225-236.

Wightman, E.M. 1970 *Roman Trier and the Treveri*. London.

Wightman, E.M. 1975 'The pattern of rural settlement in Roman Gaul' *A.N.R.W.* 2.4, 584-657. Berlin.

Wightman, E.M. 1977 'Military arrangements, native settlements and related developments in early Roman Gaul' *Helinium* 17, 105-126.

Wightman, E.M. 1985 *Gallia Belgica*. London.

Willems, W. 1984 'Romans and Batavians. A regional study in the Dutch Eastern River area, II' *BROB* 34, 39-331.

Woolf, G. 1988 'Assessing social complexity in the final Iron Age of central France'. Paper given to First Millennium Seminar, Cambridge.

6. Lower Germany: *plura consilio quam vi* Proto-urban settlement developments and the integration of native society

J.H.F. Bloemers

Introduction

The region I would like to discuss is the delta of the three large rivers of northwestern Europe: the Schelde, the Meuse and the Rhine (Fig. 6.1). I roughly define the limits of this area on the basis of the drainage basin of these rivers, bordered by the Ardennes, the Eifel and the Sauerland, and the North Sea. The Rhine formed from Augustus' reign on formally or informally the border between the Roman empire and *Germania libera*. The area we are concerned with here can be given structure by tracing hypothetical polygons around the main towns, the *capita*, of the *civitates* south of the Rhine dated to the 2nd century AD. These *civitates* usually coincided with the territories of the main indigenous tribes. Three zones may be distinguished:

- 1) The borderland south of the Rhine, situated for the most part within the territory of the 2nd century Roman province of *Germania Inferior*;
- 2) The *civitates* in the second and third line represented the hinterland and belonged for the most part to the province of *Gallia Belgica*;
- 3) The zone north of the Rhine in Free Germany.

At the beginning of the Roman occupation c. 50 BC, the majority of the region had a relatively simple socio-economic structure: power and status were based on proven qualities rather than inheritance. Cooperation and unity flowed from kinship ties and consensus. The economic system was primarily geared to subsistence needs and only to a small degree to surplus production, due to the limited political and economical specialization. With the exception of the southern area, administrative and economic centres had not developed. This is

partly reflected by the distribution of late-La Tène defended sites, which do not extend north of the line Calais-Tongeren-Cologne.

The Roman government and its army had to adapt their strategy to achieve a lasting subjection of such a poorly developed region. The relations between the army and the native population were determined by the extent to which the latter could supply necessary provisions for the military apparatus. Some of these needs were too organizationally and technologically complex to be produced immediately by the local communities of the Rhine area. Other needs could be more easily and quickly supplied. Finally, the nature of the relations determines whether or not they can be archaeologically recognized. I include lines of communication and information, political alliances, manpower in the form of auxiliary troops, food – to some extent- and certain resources, such as clay and wood, as those provisions and services available in the Rhine zone, which were needed by the army in the initial phases of conquest. Most other provisioning would have necessitated imports, or more or less radical transformations of the local system. Consequently, I believe that the local population of the frontier zone underwent three phases of incorporation: 1) Communication with the élite; 2) mobilization of auxiliary troops by means of contact with the élite; and, 3) incorporation and adaptation of the native political and economic system.

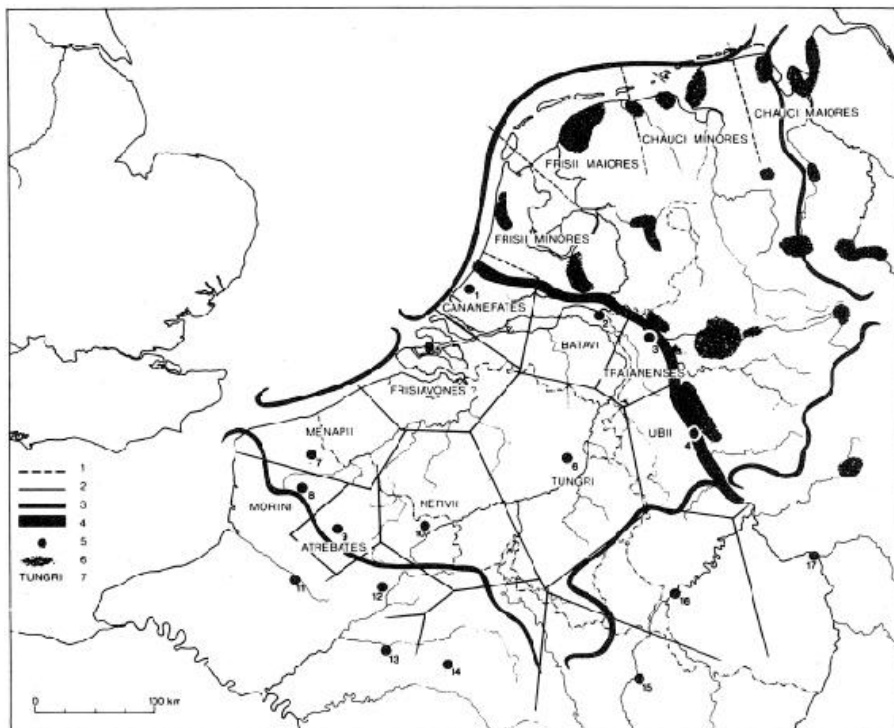


Fig. 6.1. *The Delta and hinterland of the Schelde, Meuse, Rhine, Vecht and Eems (first to third century AD).*

Legend: 1. boundaries of polygons (uncertain); 2. boundaries of polygons; 3. limits of the research area; 4. frontier of the Empire between c. AD. 50 and 400; 5. capitals of *civitates*; 6. concentration of native settlement; 7. tribal names.

Capitals of provinces and *civitates*: 1. Forum Hadriani/Municipium Aelium, or Aurelium Cannanefatium (Voorburg-Arentsburg); 2. Ulpia Noviomagus Batavorum (Nijmegen); 3. Colonia Ulpia Traiana (Xanten); 4. Colonia Claudia Ara Agrippinensium (Cologne); 5. Ganuenta (?); 6. Atuabuca Tungrorum (Tongeren); 7. Castellum Menapiorum (Cassel); 8. Tarvana (Théroutanne); 9. Nemetacum (Arras); 10. Bagacum (Bavai); 11. Samarobriua (Amiens); 12. Augusta Viromandorum (Saint-Quentin); 13. Augusta Suessionum (Soissons); 14. Durocortorum (Reims); 15. Divodurum (Metz); 16. Colonia Augusta Treverorum (Trier); 17. Mogontiacum (Mainz).

I prefer to look at this incorporation with the help of concepts of world-systems in connection with colonialism and imperialism and expressed in relationships between core and periphery. Two concepts will be mentioned: peripheral imperialism and structural dependency. Peripheral imperialism means imperialistic expansion outside the control of the core and in part caused by factors within the periphery such as collaboration of the local élite, maintenance of peace and order, and high-handed actions taken by core representatives in the periphery. Expansion of the sphere of influence is not consciously

sought, but the result of an unavoidable, but arbitrary process out of control. A structural relation of dependency exists between core and periphery, possibly only through co-operation between the élite in both areas to serve their collective interests: namely, the retention or even extension of their own societal position. Because of the greater social differences in the periphery, this co-operation is in favour of the core-élite. Those of the core and the periphery, not belonging to the élite, however have contrasting social interests.¹

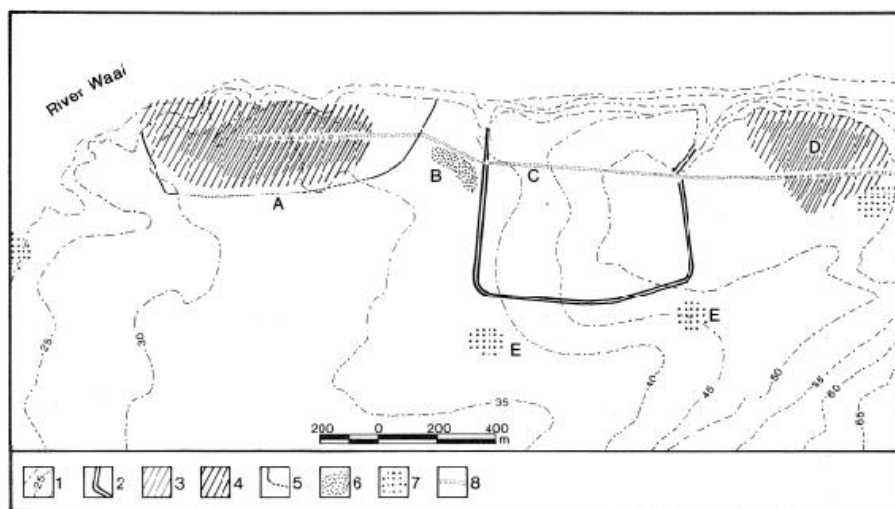


Fig. 6.2. Nijmegen: sites from c. 10 BC-AD 30-70.

Sites: A. proto-urban settlement area; B. cemetery; C. unoccupied area of former legionary camp with still visible ditches; D. occupation at the Kops Plateau; E. various smaller cemeteries.

Legend: 1. contour lines; 2. double ditch around the Augustan legionary camp, an area unoccupied in this period; 3. inhabited area, investigated and/or many finds; 4. inhabited area, not investigated and/or few finds; 5. ditch, certain and hypothetical trajectory; 6. cemetery, investigated and/or many finds; 7. cemetery, not investigated and/or few finds; 8. Roman road.

The Batavian case as a pilot study for one type of contact and urbanization

Research in the tribal area of the well known Batavians illustrates one way of contact between Roman and native, the role of military organisation and urbanization and the meaning of the concepts and terms mentioned in the foregoing section. Data and ideas are based on the extensive excavations in the large cluster of Roman sites at

Nijmegen, the excavations of some rural settlements and cemeteries and the recent study of archaeological, geological and historical sources concerning the Eastern River Area.

The core of the Batavian tribal area is in a geographical sense identical with the Holocene depositions between the rivers Rhine and Meuse in the centre of the Netherlands now named the Betuwe, a name that must have been derived from the Roman name Batavia. The Batavian *civitas*, the Roman-period administrative unit, has certainly included a large part of the Pleistocene soils in the modern province of North-Brabant south of the river Meuse.

Nijmegen

Nijmegen belongs together with Xanten and Neuss to the main strategic sites established on the left side of the Rhine for the large Augustan and early-Tiberian campaigns to conquer northwest Germany between Rhine and Elbe. Between c. 10 BC and AD 30 an area with a length of c. two kilometres and a maximum width of 700 metres was the site of at least three different military installations with various functions and chronologies (Fig. 6.2). They give a good idea of the character, duration and the intensity of the Roman presence in this section of the Rhine front during this early phase. To the east we have the 13 hectares large Kops Plateau-site (D), where large-scale excavations started in 1986 and several ditches together with various finds point to the military function of the site. Further to the west lies the immense 42 hectares fortress on the Hunerberg, where two legions or their equivalent could have been garrisoned (C). Finally there is the c. 2 hectares Trajanusplein-fort dating from the second and possibly third decade of the first century AD. In my opinion this fort had a consolidating and defensive or at best supporting character, while the large fortress must have functioned as an offensive base. The various sites allow us to reconstruct the course of the main road. Along this road a small cemetery developed east of the Trajanusplein-fort (B) and west of the fort some settlement activities of unknown character took place (within A); potters, at least were probably at work there as is suggested by a clay depot closely dated by pottery and a brooch.

The situation in the next period from AD 30-70, the reigns of Tiberius, Claudius and Nero, is quite different from the previous one. The Kops Plateau-site was still occupied, but it would be unwise to speculate about the character of the settlement in view of the ongoing fieldwork there. The large fortress was no longer in active use, but continued to be reserved for official purposes and remained a

topographical element of importance; after the Batavian revolt the Tenth Legion was garrisoned in the eastern part.

Important developments took place to the west. The small Trajanusplein-fort was given up and levelled. Along the western extension of the main road and closer to the river Waal a settlement with a regular lay-out developed. Although only relatively small parts were excavated, buildings seem to have common orientations and frontlines and in this way suggest a pattern in the form of *insulae*. One more or less complete plot showed a rectangular compound surrounded by a palisade and probably secondary roads on two sides (Fig. 6.3). Within the compound were two periods with two buildings of clear provincial-Roman character as shown by their dimensions, division and construction. In other areas again these two periods were found, but in two cases a third phase in stone was on top. Stone-buildings with a pre-Flavian date in the Low Countries are extremely rare. Several wells, probably constructed with wine-barrels, indicate that water supply was organized on an individual basis. A square pit or cellar contained an immense quantity of wine-amphorae Dressel 2-5, which points to the existence of a wine-merchant or an inn. The spectrum of the finds in general includes about 90 percent Roman and Belgic wares, in great quantities and of excellent quality, coins, bronzes, some oil lamps and only 10 percent native hand-made pottery. Such a spectrum in this period in the Lower Rhine area normally would be considered as an indicator of Roman military presence. The two sculptured blocks found in a fourth century ditch may have had a functional relationship with this settlement, depending on their final dating and interpretation. The blocks are part of a column and show a *togatus* laureated by a Victoria and offering on an altar; the inscription on the altar reads as Tiberius Caesar. Exact dating and meaning of the monument are still to be discussed in detail. Contemporary finds from the surrounding area are found in large quantities over c. 10 hectares, in smaller portions over 20 hectares. This area seems to be enclosed by a ditch with a more or less asymmetrical shape, which even seems to take into consideration the shape of the former Trajanusplein-fort; the enclosed area has a surface of c. 28 hectares and was certainly not completely build up or intensively in use. There are no traces of a wall or palisade.

The picture is completed by the characteristics of the cemetery to the east, which shows its main activity in this period. It covers an area of c. 1.5 hectare, where during some 50 years 1500-2000 individuals must have been buried; only about 150 burials were excavated in a regular way. All individuals were cremated and buried in small pits

without surrounding features. In most cases the pits contained some grave-goods, mainly consisting of Roman and Belgic wares and sometimes of glass and oil-lamps; native pottery is extremely rare (Fig. 6.4). Some 25 percent of the 73 brooches are rosette-shaped, a type which is considered to be typical for women's dress; compared with military sites this proportion is large. This suggests that women formed an important component of the population, a suggestion which is strengthened by the presence of some child-burials. Based on a length of use for the cemetery of 50 years and a life-expectancy of 25-30 years the population size can be estimated as averaging 675-1205 individuals.

From these selected data and features it can be concluded that this settlement and cemetery had the following characteristics:

- 1 The settlement had a mainly civilian function with administrative, trade or market and industrial activities; in this way it represents the future role of the later Batavian *civitas*-capital Ulpia Noviomagus;
- 2 Size, lay-out and architecture represent Roman scale and style; it is a completely new type of settlement in the Lower Rhine area;
- 3 The population had a Roman or rather Gallo-Roman origin and must have (been) deliberately settled here;
- 4 The settlement is to be identified with the pre-Flavian Batavodurum or Oppidum Batavorum mentioned by Ptolemaeus and Tacitus.²

The Batavian tribal area

What happens in the same period outside Nijmegen in the native society? Recent work of especially Roymans and Willems has updated and complemented older archaeological and historical data. Based on this evidence I will select four elements, which are crucial for the discussion of one mode of early-Roman contacts: the location of pre-Roman native centres, the presence of Roman imports in native contexts, the foundation of the Gallo-Roman temple at Elst and the recruitment of native auxiliaries in combination with grants of Roman citizenship.

The hierarchical differentiation of the native settlement system in the area between Rhine and Meuse during the late first century BC is very restricted. However, there are some indications for at least two regional centres of gravity, one in the central part around's Hertogenbosch and another not far west of Nijmegen. Roymans and van der Sanden have published a remarkable concentration of La Tène brooches, bracelets and swords and especially Celtic coins, dredged from the river Meuse at Rossum/Lith (Fig. 6.5). The coins of the Lith-type are dated between 50 and 30 BC and are considered to have been

a Batavian emission. From a stylistical viewpoint this emission is closely connected with coins of the Mardorf-type in the middle-Rhine area and illustrates Tacitus' story about the Hessian origins of the Batavians. Just south of's Hertogenbosch we have the well known altar from Ruimel, erected somewhere around AD 50 to Hercules Magusanus by Flavs, the son of Vihirmas who was *summus magistratus* of the *civitas Batavorum*. In the area around Wijchen some 10 kilometres southwest of Nijmegen Willems traced a group of sites which could have been somewhat richer and perhaps larger than normal. This is for example expressed by a striking concentration of late-La Tène glass bracelets. Surprisingly this was not the area where the later capital of the Batavian civitas was founded. That site distinguished itself by the marked absence of any native occupation at all.

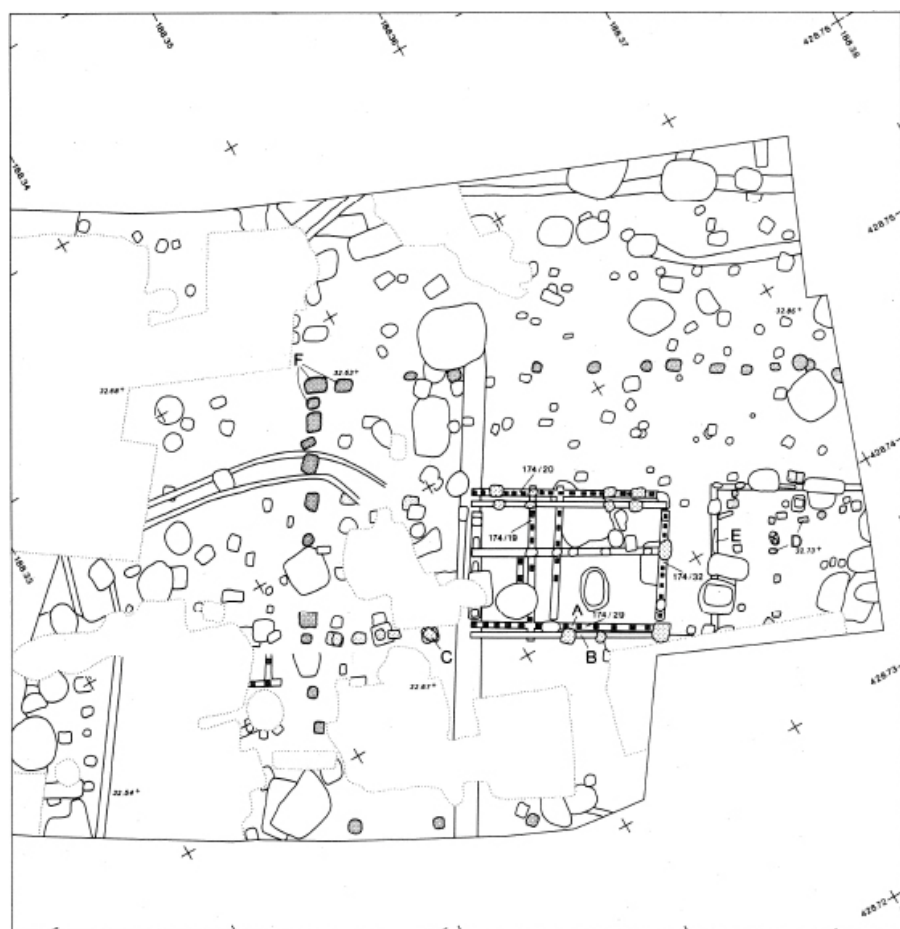


Fig. 6.3. Nijmegen. House and yard within the proto-urban settlement. A, B, C. building

with three periods; D, E. building with two periods; F. Palisade. (Grid intersections at 10m spacing)

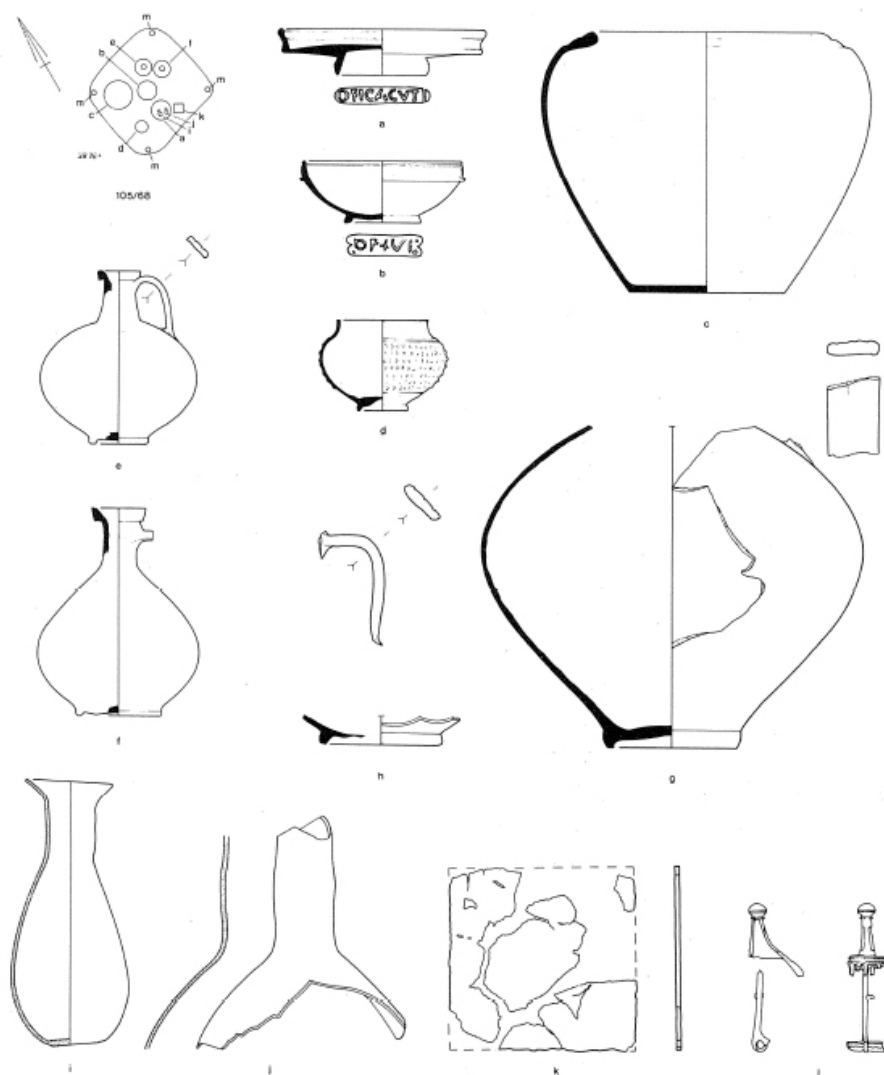


Fig. 6.4. Nijmegen. Inventory from a grave in the cemetery belonging to the proto-urban settlement. Scale approximately 1:6.

During the same period from 50 BC to AD 70 Roman imports in a native context were far less numerous than expected, when Willems started his survey in 1978 (Fig. 6.6). From some 142 settlement sites only 8 have imports dated to the Augustan period, 21 imports from the first half of the first century and 36 from the pre-Flavian era. It

can be taken to reflect the increasing availability of Roman artefacts, but generally only one, two or three finds per site are involved, which, compared to that of the contemporaneous proto-urban settlement at Nijmegen, is a completely insignificant quantity. This is incidentally contrasted by the appearance of relatively 'rich' Roman imports in cemeteries, whose native character is illustrated by the circular and rectangular ditches around the graves. In some cases like at Oss, Hatert and Zoelen graves within ditches with larger dimensions than normal contain fine brand new samian ware, expensive glass rib vessels and other complete pottery vessels. This pattern suggests that Roman imports still functioned mainly in the sphere of personal prestige, which archaeologically was expressed in life after death.

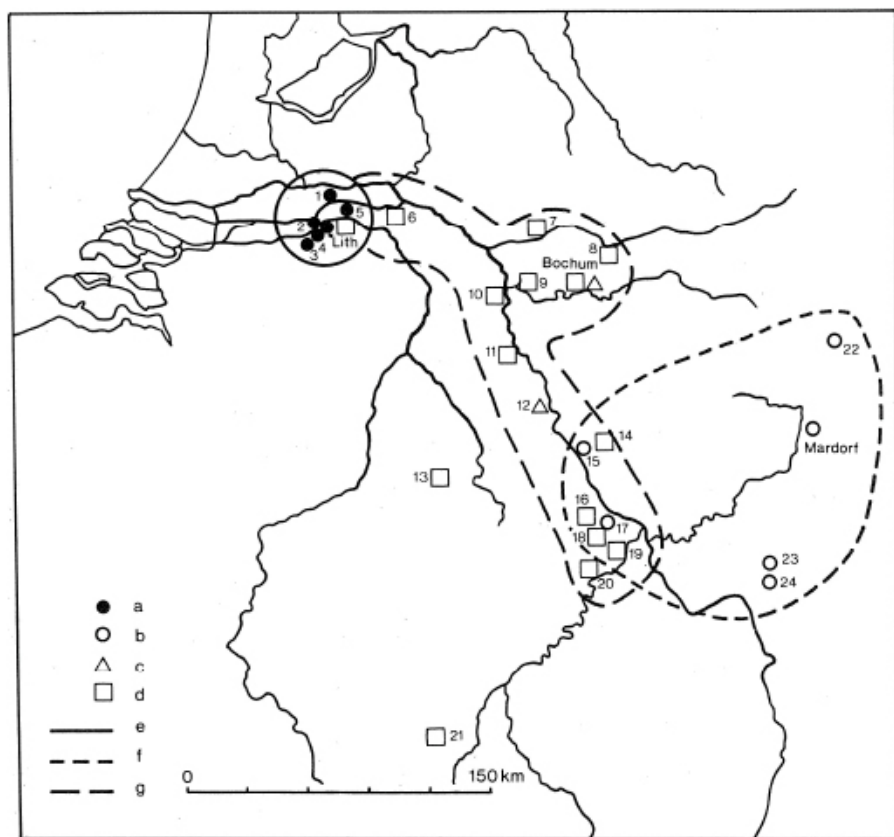


Fig. 6.5. Distribution of groups of triquetrum coins in the Middle and Lower Rhine basin.
 Legend: a. coin(s) of gold or electrum, including those of the Mardorf group; b. coin(s) of silver, not of the Lith group; c. copper coin(s), the Bochum group; d. distribution area of coins of the Lith group; e. chief distribution area of gold and electrum coins; f. chief distribution area of coins of the Bochum group.

Sites: 1. Uzendoom; 2. Rossum/Alem/Maren; 3. Orthen; 4. Kessel; 5. Megen; 6. Nijmegen; 7. Haltem; 8. Oberaden; 9. Mlilheim; 10. Bettenkamper Moor, 11. Neuss;

12. Cologne; 13. Siersdorf; 14. Oberpleis; 15. Stieldorf; 16, 17. Andemach; 18. Ochtendung; 19. Cobem; 20. Polch; 21. Titelberg; 22. Kirchberg; 23. Heidetränk-oppidum; 24. Höchst. (After Roymans/van der Sanden 1980)

There is only one well dated non-military Roman site outside Nijmegen from this period: the Gallo-Roman temple under the church at Elst, just halfway between Nijmegen and Arnhem and consequently made available for archaeological research by war actions during the Battle of Arnhem in September 1944. In Bogaers' opinion the first phase consists of a simple rectangular groundplan and must have been built in stone somewhere around AD 50. This is another exceptionally early use of stone, which is best explained by some sort of official Roman involvement. Some indications were found for the existence of an older occupation of possible native character. The location of the temple probably indicates another regional point of gravity. More important however is, that like the Roman imports in some graves, the earliest clear expression of Roman influence is found in the sphere of symbolism and religion.

Finally we have to look at the role of the Batavian auxiliaries. Batavians are considered in Roman sources as crack troops, which is confirmed by the simple fact that they contributed in a significant way to the conquest of Britain; since then only the Normans under William the Conqueror managed to repeat this heroic act a millennium later. Around AD 50 nine cohorts, one cavalry unit and one élite corps forming the emperor's bodyguard are mentioned. If one accepts with Alföldy and Bellen that these units at that time already had developed into regular troops, their total strength can be estimated at some 5500 men in permanent service. They had their own commanders and some of them are known to us by their Roman names like Claudius Paulus, Claudius Victor, Julius Briganticus and the most renowned of all, Caius Julius Civilis; they belonged to the élite of their tribe. The Julio-Claudian emperors had granted them Roman citizenship, as is shown by the various *nomina gentilia*. From this emerges a clear picture of large numbers of warriors involved in increasingly intensive contact with Roman army organization and native leaders gaining prestige on the battlefield and by receiving imperial grants. Contact and prestige were restricted to one segment of the native society in one specific setting: men able to fight.³

A provisional explanatory model for the observed data
Comparing the observations made in the cluster of sites at Nijmegen

and the native rural area outside during this early-Roman period, the following explanatory points can be made:

1) There is no relationship at all between the location of pre-Roman or early-Roman native centres of gravity and the proto-urban central place of the future tribal capital. The location of the latter seems to be determined by the same factors that ruled the location of military sites: strategical position in view of the geographical and morphological properties of the region. On the other hand this new proto-urban centre did not originate from a military site or its surroundings. Military and civilian settlement were not located on the same site, possibly not even existing at the same time and consequently having no direct economical link. Size, lay-out, function and population indicate that the proto-urban centre must have been a settlement that was deliberately and artificially created, populated with inhabitants coming from the Gallic hinterland. Veterans may have formed part of this population, but they could never have been the prime mover of this development. Their number must have been too low in a phase where the empire was waging wars to expand the frontiers; their age must have been too high to give their best for the development of a booming town, and finally: what about their skills, except for the carpenters, potters, smiths and others experienced in craft or commerce?

2) Interaction between Romans and natives was channelled by contacts with the local élites, aimed at the mobilization of warriors and consequently mainly restricted to the male segment of native society. This harmonized with social and economic properties of this society. Like many Celtic or Germanic tribes, traditionally, much of the prestige could be earned on the battlefield, and manpower was more easily mobilized and more effective for Roman short term purposes than the low level native agricultural system. Courage and loyalty were honoured with gifts like pottery and glass vessels, grants of Roman citizenship and special arrangements like tax exemption, all gifts which were not too expensive for the Roman state. All this is told to us by Tacitus in his description of the Batavians: "Their distinction persists as the emblem of their ancient alliance with us: they are not insulted, that is, with the exaction of tribute, and there is no tax-farmer to oppress them: immune from burdens and contributions, and set apart for fighting purposes only, they are reserved for war, to be, as it were, our arms and our weapons."

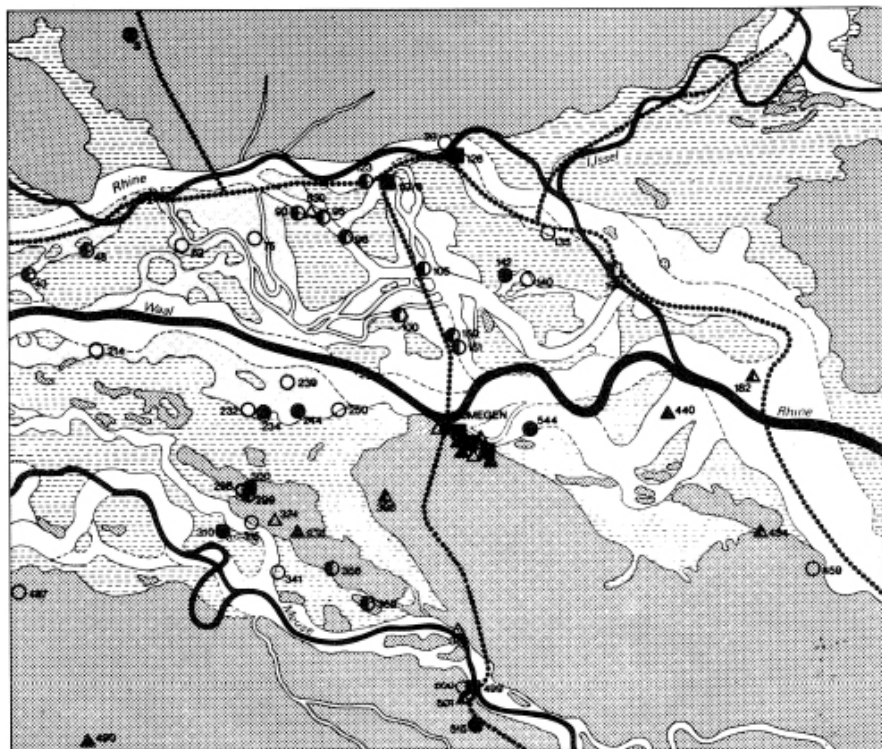


Fig. 6.6. Eastern River area with a reconstruction of the landscape and the river courses during the Late Iron Age and the Roman period and the location of sites with early imports and primary routes (early axes of military activity).

Legend: 1. Pleistocene deposits; 2. flood-basin deposits and peat; 3. bank deposits and pre-Roman channel zone deposits; 4. estimated channel deposits (meanderbelts) related to active river branches, major brooks, and some of the small and in part still active fossil channels; 5. present day river channels; 6. boundaries of deposits; 7. reconstructed boundaries of deposits; 8. routes; 9. military settlements, Augustan and IA AD; 10. native settlements (circles) and cemeteries (triangles), Augustan, IA and pre-Flavian, (map width approximately 44km)

3) Integration of the native economic system during this early-Roman period must have been very restricted. Native agriculture was certainly not yet geared for substantial surplus production of food and other products of at least minimal quality needed in great quantity by the Roman army. Clear changes in this direction appear only after the Batavian revolt. Apart from that, the administrative and commercial infrastructure with central places was lacking. That was the reason to stimulate the development of a proto-urban settlement in Nijmegen

called Batavodurum or Oppidum Batavorum, which must have meant ‘town in the land of the Batavians’ rather than ‘town of the Batavians’. In its early years it must have been supported by the Roman administration.

Parallel developments in other tribal areas of Germania Inferior and Gallia Belgica?

There are indications for similar developments in other tribal areas of Germania inferior and Gallia Belgica, when we look at settlements in Xanten, Tongeren, Cologne, all destined to become the capital of a *civitas*.

Especially Xanten is important in comparison with Nijmegen and its surroundings: it is one of the main military sites for the conquest of Germania libera, it is Nijmegen’s most important neighbour on the Rhine front at only 70 kilometres distance and it has been the subject of large-scale systematic research for decades. Without the data from Xanten it would have been more risky to interpret the Nijmegen data, as is done above. On the ice-pushed ridge of the Fürstenberg lies the legionary site *Vetera I*, which was in active use from Augustan times until its destruction by the rebellious Batavians in AD 69. Northwest of it at a distance of 2.5 kilometres the Colonia Ulpia Traiana was founded somewhere around AD 100. Under the Colonia clear indications are found of an older settlement, which is generally called the “Vorgängersiedlung” and has sometimes been interpreted as a native settlement of the regional tribe the Cugemi. Settlement finds cover the central area of the later Colonia west of the Roman road and show three phases of occupation with timber constructions and one in stone. The earliest is dated around 30/40 AD, the second one was burned down in AD 69/70. The sleeper beam construction is normally used during the timber phases. The general lay-out of the building plots is regular and differs only slight from that of the later Colonia. Finds have mainly a Roman or Gallic origin, only a small quantity must be native products; pre-Roman finds are exceptional. Economy seems to have been based on trade and crafts rather than on agriculture. To the north, a short lived early-Tiberian fort is supposed to have existed, to the south various pre-Flavian graves have been discovered. Settlement and military finds cover an area of roughly 30 hectares or even more. Tacitus mentions in his description of the Batavian revolt that not far from the legionary camp a settlement “in modum municipii” existed, which may have been identical with the “Vorgängersiedlung”. Oelmann has suggested that the name for this

site was Oppidum Cugemorum, Bogaers recently Cibemodurum.

The archaeological data for Cologne are less conclusive, but in several respects the historical data are very useful. From Tacitus' description we know that in AD 14 the Ara Ubiorum, the Oppidum Ubiorum and the two-legion fortress *apud aram Ubiorum* were close to each other. The Ubians were a Germanic tribe originally living on the right bank of the Rhine, but who were allowed to settle on the left bank, perhaps around 38 BC. The Ara Ubiorum was founded at an unknown date before AD 14 and intended to function as the political and religious centre of the Germanic provinces. The Oppidum Ubiorum became the Colonia Claudia Ara Agrippinensium around AD 50 by intervention of the empress Agrippina, who was born there in AD 15. The fortress was garrisoned by the 1st and the 20th Legions from c. AD 10 to 40. Features are extremely scarce which can be exclusively identified with the various sites known from historical sources. A pre-Claudian street grid seems to have the same lay-out as the Colonia. Settlement finds occur over an area of at least 80 hectares and consist of Roman and Gallic products, Roman sculptures and monuments, with no signs of previous native occupation. In the northern part of it a ditch, an earth-timber wall and the *praetorium* point to military activities; within this area the early-Augustan Arretine stamps are found. Later Arretine ware was discovered in the southern part, where the so-called monument of the Ubii and several pottery kilns of Tiberian-Claudian date have also been excavated. The area of 80 hectares is large enough to have accommodated both a two-legion fortress of c. 50 hectares to the north and a civilian settlement of c. 30 hectares south of it.

Tongeren is the third site chosen for a closer look. It has a strategical position in view of its connection between the Gallic hinterland and the Lower-Rhine front. Various finds from early Augustan times onwards are found over an area of c. 80 hectares. Celtic coins seem to concentrate in the southwest, where also a ditch from pre-Flavian or possibly early-Roman date has been excavated. The occupation of the southwest area seems to have ended before the reign of Tiberius and from then on it was used as a burial ground. Only in the eastern part, where a pre-Flavian ditch has also been found, did occupation continue. Under Claudius a regular grid of streets was constructed over an area of c. 56 ha. Timber buildings with sleeper beam constructions and foundation trenches with fragments of stone from Claudian date cut Augustan features, but traces of a native pre-Roman occupation have not been discovered. The groundplans differ clearly from what now is known as the typical

native farmstead in this region. There are no special indications of the nature of the economic activities in the settlement. Generally, the site is referred to as Atuatuca Tungrorum. Mention should be made of the existence of a 20 hectares-large defended site some 13 kilometres east of Tongeren on the left bank of the river Meuse. The construction of its timber walls is dated by dendrochronology around 31 BC. It is reasonable to suspect that this site represents some sort of gravity point for this region in the late-La Tène period. The dislocation of the proto-urban settlement at Tongeren and even the early-Roman occupation at Maastricht, within view of this site, is remarkable.

The indications of Roman influence or activities in the region around the settlements at Xanten, Cologne and Tongeren have not yet been discussed. This can only be done in a very provisional manner, since data are incomplete and unbalanced. Gechter and Kunow have recently collected the finds from five different environmental units in the Lower-Rhine area between the North-Eifel and the German-Dutch border. All units including that close to Cologne show that Roman imports dated before the middle of the 1st century are extremely rare. Only from that time on do imports greatly increase. For the area round Tongeren with its large number of Roman villas it is generally accepted that Roman imports increase in Flavian times.

The sites discussed have some essential common characteristics, which coincide well with the Nijmegen data:

1 At all sites, indications are found for the development of a large and probable civil settlement, where intensive building activities started about AD 40 or at least during the reign of Claudius.

2 All sites had some sort of military presence of Augustan and sometimes Tiberian date near to the civil settlement. This military presence seems to have stopped before, or at least during, the early phase of the development of the civil settlement.

3 No site has yielded any clear indications for the presence of a native pre-Roman predecessor, and, consequently, the location is discordant with native settlement patterns.

4 All sites have dimensions much larger than the known permanent native settlements in the region; have some sort of regular layout and have, as far as is known, buildings which differ in construction and plan from the known native houses.

5 All sites have large quantities of Roman and Gallo-Roman products.

6 As far as expressed by Roman imports, contacts with the rural areas around these settlements seem to have been very restricted before the middle of the 1st century AD. They increase strongly from then on.

These phenomena suggest an explanation for the period AD 40 to 70

similar to that in the Batavian area: namely, the foundation of an entirely new type of settlement with non-native inhabitants and a very restricted economic interaction between this settlement and the native society; interaction between the Roman administration and native society was mainly focussed on the native élite for alliances and aiming for example at the mobilization of troops.⁴

Some remarks on contacts, integration and colonial cities

To support this sort of interpretation, it is useful to look at contact situations, rate of integration and characteristics of colonial cities in subrecent colonial history.

The combination of a given strategy, eradication, acculturation or equilibrium, with domination in the form of colonialism or imperialism will result in a specific outcome, each with different consequences for the archaeological record (Fig. 6.7). Combinations need not to be mutually exclusive in a geographical or temporal sense. In the discussed situation the colonialism/equilibrium outcome is interesting, where the newly established settlement functions like an enclave inside the native society. This approach represents a low profile strategy, which allows for the most efficient control and exploitation of locations and resources believed important, while indigenous populations are limited in cultural exposure and retain their native values. This is in agreement with the concept of structural dependency. Gradually, especially after the Batavian revolt, the strategy may have shifted to the colonialism/ acculturation outcome.

	COLONIALISM (settlers)	IMPERIALISM (no settlers)
ERADICATION- RESETTLEMENT	abrupt cultural change (replacement)	regional 'empty cell'
ACCULTURATION	slow indigenous culture change	slow indigenous change in economics
EQUILIBRIUM (metastable)	settlement enclaves 'two cultures'	indigenous cultural maintenance

Fig. 6.7. A matrix of probable behavioural outcomes in situations of power domination, based upon ethnographic and historical examples. After Horvath 1972 and Bartel 1985.

French neo-marxist anthropologists like Meillassoux have emphasized the concept of “articulation”: the foreign intrusive mode of production is combined with the indigenous mode of production rather than replacing it. The native economy is generally based on a kinship mode of production; the foreign one on surplus production in combination with a system of money, markets, tributes and taxes. The intrusive mode becomes gradually dominant by incorporation of the native one. Since this is a gradual process, contacts in an early phase between both systems are so few that it is difficult to trace them archaeologically.

A special topic of research in colonial history is the so-called “colonial city”, which has some unique features compared with other urban agglomerations:

- 1) Power is principally in the hands of a non-indigenous minority;
- 2) This minority is superior in terms of military, technological and economic resources and, as a result, in social organisation;
- 3) The colonised majority are racially or ethnically, culturally and religiously different from the colonists.

A selection of some characteristics is of special interest for us: a dualistic economy, which means an economy with connections in two different cultures; existence of an intervening population, a grid-iron planning dictated by foreign models, multiplicity of functions, heterogeneous demographic structure.

Perhaps these analogies can help us in future research on early contacts between natives and Romans. The absolute date of this phase will vary from one Roman province to another. For Lower Germany the reigns of Tiberius and Claudius seem to mark the turning-point. Tacitus’ remark on Tiberius’ policy for Germany reflects this: “plura consilio quam vi”: more with prudence than with force. The same could apply for our own research.⁵

Acknowledgements

I thank Mrs. L.L. Therkorn for correcting the English translation, N. Roymans., W. van der Sanden and W.J.H. Willems for the permission to use their maps and A.M. Nijs and J.H. van Vlierden for preparing Fig. 5.3.

Notes

¹ Bloemers 1983; 1988; Roymans 1983; Willems 1984, 197-386.

² Bloemers 1985 and in prep.; Noviomagus 1979, 17-36; Willems 1984, 73-76 and 83.

- 3 Bogaers 1955; Roymans/van der Sanden 1980; Willems 1984, 197-239.
- 4 Xanten: Hinz 1975, 826-839; Rüger 1980, 495; von Detten 1983; Schmidt 1984; Bogaers 1984. Cologne: la Baume 1972; Hellenkemper 1972-1973; Doppelfeld 1975, 718-728 and 732-737; Gechter 1979, 95-97. Tongeren: Vanvinckenroye 1975, 15-29; Mertens 1985, 262-263.
- 5 Raatgever/Geschiere 1982, 4-8; Bartel 1985; King 1985.

References

- Bartel, B., 1985: Comparative historical archaeology and archaeological theory, in: S.L. Dyson (ed.), *Comparative Studies in the Archaeology of Colonialism*, Oxford (British Archaeological Reports, Int. Ser., 233), 8-37.
- Baume, P. la, 1972: Das römische Köln, *Bonner Jahrbücher* 172, 271-292.
- Bloemers, J.H.F., 1983: Acculturation in the Rhine/Meuse Basin in the Roman Period: a preliminary survey, in: R. Brandt/J.Slofstra (eds.) 1983: *Roman and Native in the Low Countries. Spheres of interaction*, Oxford (British Archaeological Reports, Int. Ser., 184), 159-209.
- Bloemers, J.H.F., 1985: Drie basiskaarten voor de bewoning uit de 1ste eeuw na Christus te Nijmegen, in: S. Scheers/E. Scheltens (ed.), *Miscellanea in honorem Josephi Remigii Mertens. I. Topographia Antiqua*, Leuven (Acta Archaeologica Lovaniensia, 24), 39-51. (1987)
- Bloemers, J.H.F., 1988: Periphery in pre- and protohistory. Structure and process in the Rhine-Meuse basin between c. 600 BC and 500 AD, in: R.F.J. Jones, J.H.F. Bloemers, M. Biddle, S. Dyson (eds.), *First Millennium Papers*, Oxford: BAR.
- Bloemers, J.H.F., in prep.: *Excavations at Nijmegen, I*, Amersfoort (Nederlandse Oudheden).
- Bogaers, J.E.A.Th., 1955: *De Gallo-Romeinse tempels te Elst in de Over-Betuwe. The Romano-Celtic temples at Elst in the Over-Betuwe District*, Den Haag (Nederlandse Oudheden, 1).
- Bogaers, J.E., 1984: Zum Namen des "oppidum Cugernorum", *Naamkunde* 16, 33-39.
- Detten, D. von, 1983: Die Strassengrabung CUT Schnitt 80/23-24, in: G.Bauchhenss and G.Hellenkemper Salies (eds.), *Ausgrabungen im Rheinland 1981/1982*, Köln/Bonn, 114-118.
- Doppelfeld, O., 1975: Das römische Köln. I. Ubier-Oppidum und Colonia Agrippinensium, in: H. Temporini/W. Haase (eds.), *Aufstieg und Niedergang der römischen Welt. Geschichte und Kultur Roms im Spiegel der neueren Forschung. II.4. Prinzipat*, Berlin/New York, 715-750.
- Gechter, M., 1979: Die Anfänge des Niedergermanischen Limes, *Bonner Jahrbücher* 179, 1-138.
- Hellenkemper, H., 1972-1973: Oppidum und Legionslager in Köln, Überlegungen zur frühromischen Topographie, *Kölner Jahrbuch für Ur-und Frühgeschichte* 13, 59-64.
- Hinz, H., 1975: Colonia Ulpia Traiana. Die Entwicklung eines römischen Zentralortes am Niederrhein, in: H. Temporini/W. Haase (eds.), *Aufstieg und Niedergang der römischen Welt. Geschichte und Kultur Roms im Spiegel der neueren Forschung. II.4. Prinzipat*, Berlin/New York, 825-869.
- King, A.D., 1985: Colonial cities: global pivots of change, in: R.J. Ross and G.J. Telkamp (eds.), *Colonial cities*, Dordrecht/Boston/Lancaster, 7-32.
- Mertens, J., 1985: Les débuts de l'urbanisation dans le Nord de la Gaule, *Caesarodunum* 20, 261-280.
- Noviomagus 1979: *Noviomagus. Auf den Spuren der Römer in Nijmegen*, Nijmegen.

- Raatgever, R. and P. Geschiere 1982: Inleiding. Een eerste verkenning van het werk van Franse marxistische antropologen, in: W. van Binsbergen and P. Geschiere (eds.), *Oude produktiewijzen en binnendringend kapitaëlisme. Antropologische verkenningen in Afrika*, 1-23.
- Roymans, N., 1983: The North Belgic Tribes in the 1st Century BC: a historical-anthropological Perspective, in: R. Brandt and J. Slofstra (eds.) 1983: *Roman and Native in the Low Countries. Spheres of interaction*, Oxford (British Archaeological Reports, Int. Ser., 184), 43-69.
- Roymans, N. and W. van der Sanden 1980: Celtic Coins from the Netherlands and their Archaeological Context, *Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek* 30, 173-254.
- Rüger, C.B., 1980: Research on the *limes* of Germania Inferior (German part), 1974-1979, in: W.S.Hanson and L.J.F.Keppie (eds.), *Roman Frontier Studies 1979. Papers Presented to the 12th International Congress of Roman Frontier Studies*, Oxford (British Archaeological Reports, Int. Ser., 71), 495-500.
- Schmidt, F.W.V., 1984: Die Grabung im südöstlichen Forumsbereich der Colonia Ulpia Traiana bei Xanten, *Bonner Jahrbücher* 184, 317-326.
- Vanvinckenroye, W., 1975: *Tongeren. Romeinse stad*, Tongeren.
- Willems, W.J.H., 1984: Romans and Batavians. A Regional Study in the Dutch Eastern River Area, II, *Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek* 34, 39-331.

7. Relations between Roman occupation and the *Limesvorland* in the province of Germania Inferior

by Jürgen Kunow

A more detailed contribution to this theme has already been published (Kunow 1987). In that paper I included further evidence and distribution maps. Here I have provided more extensive treatment of the theoretical background to the successful occupation of Gaul and the attempted but unsuccessful conquest of Germany.

Beginning with the strip of land that extended from Germania Inferior to the east and north-east, this paper will deal with three themes connected with the occupation of our region. First, we will concern ourselves with the *Limesvorland* (the area in front of the *limes*) in the southern area of the province, its significance and development from its beginnings to Late Antiquity. Secondly, we examine in a wider context the different reasons for the successful occupation of Gaul and the failure of the conquest in Germany. Thirdly, we return to the *Limesvorland*, including the zone further north, in what is today the Netherlands, to investigate the question of an attached client zone of dependent German tribes of a type common in Germania Inferior. It is intended to show that these three themes are closely connected.

Military exploitation and native settlement in the Limesvorland of southern Germania Inferior

Whilst it is known that during the Roman period people settled on the left bank of the Rhine in Lower Germany following large migrations, until recently very little attention has been devoted to the adjacent strip of land on the right bank. One can cite only the work of Kahrstedt (1950, especially p.46) and von Petrikovits (1979, especially p. 238) who have outlined hypotheses for this area and have produced syntheses of the historical evidence. The *Limesvorland* was first described as the 'glacis' by Kahrstedt. This term refers to the original

characterization of the right bank of the Lower Rhine by Mommsen (1885, 111), who thought that for Rome this territory 'was like, for instance, the terrain lying under the fort commander's cannons'. Other students like von Petrikovits (1978, 67) have adopted Kahrstedt's terminology. We, however, consider this term to be inappropriate since in early modern defensive terminology 'glacis' suggests a piece of land that is artificially raised and which the attackers must overcome when storming a fortress. If one wanted to speak of a 'glacis' at all in the Roman period, it would be with reference to the earthworks around the military camp, and it would certainly not have been situated in front of the *Limes*.

At the first *Limes* congress, Kahrstedt dealt with the *Limesvorland* on the right bank of the Rhine. As an ancient historian he started mainly from the written sources and attempted to relate them to the archaeological evidence already published by von Uslar (1938). The passage from Tacitus (*Annals* 13, 54) which describes an event on the Lower Rhine in AD 58, played a central role in Kahrstedt's argument. At that time, the Frisii were attempting to occupy abandoned estates the use of which was reserved for the military (...*ripae agrosque vacuos et militum usui sepositis insedere*...). They established themselves but were subsequently expelled by imperial decree. Shortly afterwards the Ampsivarii attempted to do the same but with equally little success. It is known that this tribe were on good terms with Rome; their leader was Boiocalus, whose loyalty could be traced right back to the days of Arminius.

Informative in this context is Boiocalus' accusation that despite the modest extent of the land, the military overgrazed it. He spoke of 'wasteland and desertion' (*vastitatem et solitudinem*). From the context of this reference, it is apparent that security requirements were more important than the economic value of these estates. We will return to discuss this further.

Kahrstedt (1950, 41) believed that with the change in Roman policy towards Germania following the defeat of Varus in AD 9, a wider strip ('glacis') of the *Limesvorland* was to be kept free from native settlement. It was not until Vespasian (c. AD 70) that the ban was dropped and an increase in settlement permitted. Kahrstedt made further distinctions, defining two areas, one north and one south of the River Lippe, which flows east-west. He recognized that the establishment of this buffer zone did not take place until AD 47 in the area north of the Lippe and could therefore be seen in connexion with Corbulo's campaigns and the retreat to the Rhine frontier.

Obviously, a break in occupation of only twenty-three years can

hardly be recognized archaeologically, so the area north of the Lippe, in contrast to that to the south, may be seen as having a continuous sequence of occupation. This problem will be discussed again in relation to the region between the Lippe and the Dutch-German border.

Even if Kahrstedt's geographical distinctions are not used, although not disproved, it is now generally agreed that from the Flavian period the *Limesvorland* was settled by Germanic peoples right to the bank of the Rhine. According to von Petrikovits (1979, 238) the presence of small groups was acceptable, although the settlement of a whole tribe was not. He believed that this was a result of the army's need for exploitable land rather than any concern for security. Such a demand could be fulfilled in the *Vorland* without putting pressure on the provincial population. Both the hypotheses of Kahrstedt and von Petrikovits about the *Limesvorland* on the right bank of the Rhine are models based on historical sources and general considerations. Until now the archaeological evidence has hardly been considered in relation to this problem. For this reason I shall concentrate upon it.

It may come as a surprise that we know of more than 200 Roman findspots in the *Limesvorland*. This clearly demonstrates that the zone was more densely settled during the period than has hitherto been believed, on the basis of Tacitus for instance. The findspots can be divided into two groups, one Roman the other native. The known Roman finds are a result of either:

1. the exploitation and use of natural resources
2. agricultural exploitation
3. the establishment of military training camps

There is no evidence whatsoever for the presence of civilians on these sites. One may add a further category of material, namely objects (such as Roman building materials) which sometimes had a secondary use. Clearly in this case we must also consider individual instances of demolition and transportation of materials across from the left bank of the Rhine. The 21 Roman findspots are all closely associated with the river Rhine, and are all no further than 10 km from it. This area can correctly be called the *Vorland*.

The majority of the known findspots – over 200 – are associated with Germanic settlement. Only settlement sites and cemeteries where continuity of use can be demonstrated have been researched. Hoards and individual finds that cannot be certainly attributed to Germanic activity have been disregarded. These native findspots are also found right up to the Rhine and demonstrate, at best, a very sparsely settled strip behind them. In the south and centre of the study area the low

densities of finds can largely be explained in terms of topographical factors (the Bergisches Land and the Sauerland); in the extreme north, beyond the Lippe, and to the east (in Westphalia, outside the study area) we would expect more dense Germanic settlement in front of the sparsely settled strips of land. Additionally, in the north, to the west of the river Ems, large areas of marshland formed a natural barrier which separated the Germanic settlers of the Lower Rhine from the inhabitants of Free Germany (Gechter 1979, 115, fig. 52). The east-west flowing Lippe, however, functioned to open up the Westphalian Basin.

Of the 186 Germanic findspots in the *Limesvorland*, only 107 – scarcely 60% – can be closely dated. This percentage is low as a result of lost pre-War finds. The datable assemblages can be securely assigned to three approximate periods, first century, second-third century, and fourth-fifth century. However, like the majority of sites known from casual finds, the haphazard evidence does not cover the whole period under examination. The following interpretations are therefore based upon only the more reliable information. These limitations are not applicable to this area, the Altkreis Rees, north of the Lippe, where several fieldwalking surveys undertaken in the 1960s give a better picture of site distribution and chronology.

In the *Limesvorland* of southern Germania Inferior 21 first century AD native findspots are known. Three can be accurately dated to the Augustan period; otherwise the finds date to the second half of the first century, the parallels being with the Claudio-Neronian horizon at Hofheim. The pattern suggests that the reasonably sparse pre-Roman occupation is abruptly terminated (Marschall *et al.* 1954; Reichmann, 1979, 218); only a few finds continue into the first century AD. By the middle of that century a gradual reoccupation is seen, and this develops until the end of the century. As there is no evidence for any continuity of settlement or population, this is clearly a result of new immigration.

From the second century AD the picture changes fundamentally. In the middle Empire we have 91 native findspots from an extensive area of the *Limesvorland*. Despite the favourable research conditions scant concentrations are recorded north of the Lippe. In the southern and middle river sections, further Germanic settlements may have been on the preferred land between the lower river terrace and the adjoining hills. Large scale excavations have been undertaken on three sites south of the Lippe, for which, however, there is secure evidence only for second-third century occupation. These sites were the cemeteries of Troisdorf-Sieglar (Joachim 1987) and Leverkusen-Rheindorf (von

Uslar 1938, 224), and the mid-Empire settlement of Düsseldorf-Stockum (Rech 1982, 477). At a fourth large excavation near Haffen-Mehr, north of the Lippe, the settlement continued into the succeeding period (Neuffer-Müller 1978, 479).

The distribution map for the Late Antique period shows yet another change. Only 22 findspots are known in contrast with the 91 of the previous phase. The decrease is thus considerable. If we look at the situation north of the Lippe, the recorded invasion is less clear (42 mid-Empire; 19 Late Antique). This situation approximates to the numbers known for the adjoining northern Batavian region (Willems 1986, appendices 3 and 4). The question arises, of whether this bias affecting the north side of the Lippe in the fourth century is explicable by the intensity of research alone. That may be so in part, but it remains striking that the excavations (at Troisdorf-Sieglar, Leverkusen-Rheindorf and Düsseldorf-Stockum) have also produced little Late Antique material. One is forced to conclude that, in the *Vorland* north of the Lippe, there was a greater density of native population even though this represents a reduction on the numbers in the middle Empire. The evidence suggests that along the Lower Rhine the Chattvarii, a Frankish tribe, took over the settlements of the Tencteri and the Bructeri (Neumann and von Petrikovits 1982, 391).

The changes observed in the *Limesvorland* from the first to fourth century AD are striking, although its value to the Empire is questionable. Was the strip primarily strategic, thus a security zone, or was it more significant for military logistics? The evidence presented above shows that the answer is clear. Germanic settlement was spread uniformly through time, and variations in the intensity of military exploitation caused differences in Roman limitations on Germanic settlement. In the periods of modest native settlement, in the first and fourth-fifth centuries, the need for exploitable land was no greater than that in the mid-Empire. That the army also used the strip for economic purposes is certain, and is attested by casual finds, but there was no exclusive 'military territory' (Rüger 1968, 51; Mócsy 1972, 133; Vittinghoff 1974, 123) along the right bank of the Rhine.

From the beginning, the *Limesvorland* took on a strategic significance; only in this way can the collapse of native settlement in the first century AD be explained. It is sufficiently understood to say that, after the defeat of Varus and the failure of Germanicus' campaigns, the forward development of the Lower Rhine frontier was abruptly curtailed and a supply line (the Rhine) established for the *Limes*. From then onwards, as it was no longer possible to maintain a defence in depth, the *Vorland* must have taken on a greater

importance. It was thus sensible not to allow significant native settlement in the area. Sometime towards the end of the first century or at the beginning of the second, a change occurs. We would like to relate this change to Trajanic demilitarization rather than the Vespasianic reorganization of the *Limes* following the Batavian rebellion as Kahrstedt believed (1950, 80; 1952, 46). Trajan, amongst other things, reduced the number of legions on this frontier by half (Gechter 1979, 126). For about 150 years, until the onset of Frankish attacks, the Lower German *Limes* was peaceful. It was as a concession to this situation and as a result of the attractiveness of the Empire that the administration of the *Limesvorland* became less rigid. With the onset of the Frankish invasions, the *Limesvorland* must have regained its strategic importance and consequently was again depopulated.

It follows that the *Vorland* was valued as an integral part of the Empire. The environmental conditions meant that the settlement of Germans in the second-third centuries was more closely linked to the Empire than Free Germany. Presumably the depopulation of the *Limesvorland* in the Late Empire corresponds to resettlement on the left bank – an event not altogether new for the Lower Germanic peoples. The erection of a *prata legionis* boundary, represented by a stone altar at St Augustin-Niedermenden (von Petrikovits 1974, 27), corresponds well with this context, and is of Spanish or Danubian type (Mócsy 1972). It may indicate a clear territorial claim on the *Regio Translimitana* (Kiechle 1962, 171).

Reasons for the differing course of the conquest of the Gauls and Germans

We now turn to interpret the analysis of the *Limesvorland* and apparently digress from the theme to look at the analysis of the geographical area. In only a few years of war against the Gauls, Caesar conquered a vast region up to the Rhine. Despite their great military power his successors, Augustus and Tiberius, could not continue his success by annexing the area on the right bank of the Rhine up to the Elbe as had been planned. The central question is thus, why the operation succeeded in one case but not in the other. Different military strength or eagerness for battle can hardly have been the sole reasons. Rome finally failed on the right bank of the Rhine because the prerequisites for occupation were absent. An explanation for this can be found in Galtung's (1972) model of imperialism, which may be as unknown in the English speaking world as it is in German archaeology (for the Dutch version see Bloemers 1983). In the following model

(Fig. 7.1) we see an idealized statement of fact, in the style of David Clarke (1972, 2).

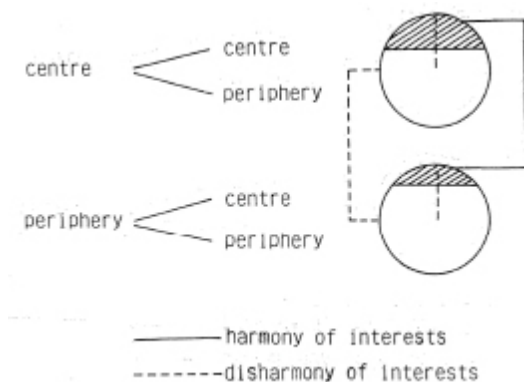


Fig. 7.1. *The structure of imperialism (according to Galtung 1972).*

Starting from modern colonial/imperialist relations, Galtung has developed theoretical hypotheses about the structure of imperialism that may be applied to the situation in antiquity. Galtung's basic idea is that the centre (the nobility) of the central nation (Italy) must have succeeded in building a bridgehead to the peripheral nations (Gaul and Germany). This connexion must have been well chosen and must without fail have reached the centre of the peripheral nation (the native nobility). Only in this way, in the long term, is the integration (as distinguished from the occupation) of the conquered land at all possible. This bridgehead is so established that the centre of the periphery and the core of the central nation are bound together; their ties being in the interests of mutual harmony. Both are so connected that they rise, decline, and even collapse together. Between the periphery of the central nation and the peripheral nation itself there exist no common interests (but rather a 'disharmony'), as the products of the peripheral nation, for instance, were seen at the core as competition for the central nation's own products (Galtung 1972, especially 37). The application of this model makes the successful Gallic and unsuccessful Germanic occupations understandable. Only with a few German tribes, such as the Marcommani and the Quadi on the Danubian *Limes* (Kólnik 1986), were links successfully forged with the native nobility. In order to understand this, it is necessary to compare the different levels of social development and the different types of social structure within Gallic and Germanic societies. We will begin with the Gauls.

From written sources we know that the Celtic world had a rigid

hierarchically structured society (Dobesch 1980, 433 ff.), the top of which comprised the *equitatus* and *principes* of the *nobilitas*. The *auctoritas* of individual leaders was so great that they even minted their own coinage which was also used as a means of payment outside the limits of their own spheres of influence. The installation of a central authority (this expression is used in accordance with Weber (1956, 519) as an 'external compulsory mid-permanent institution') is reflected in its own specific coinage for which the acceptance of authority in special measure is a prerequisite. We can only name the native personalities that have come down to us from Caesar, such as Vercingetorix, Orgetorix, Dumnorix, Litavicus, Tasgetius, Divitiacus, Lucterios or Espasnactus, whose own coinages are well known (Forrer 1968, 112 ff; Allen and Nash 1980, 128 ff). Such a high level of society as this was only reached by the Germanic tribes with the coin-minting Franks or Ostrogoths in the sixth century AD (Werner 1954).

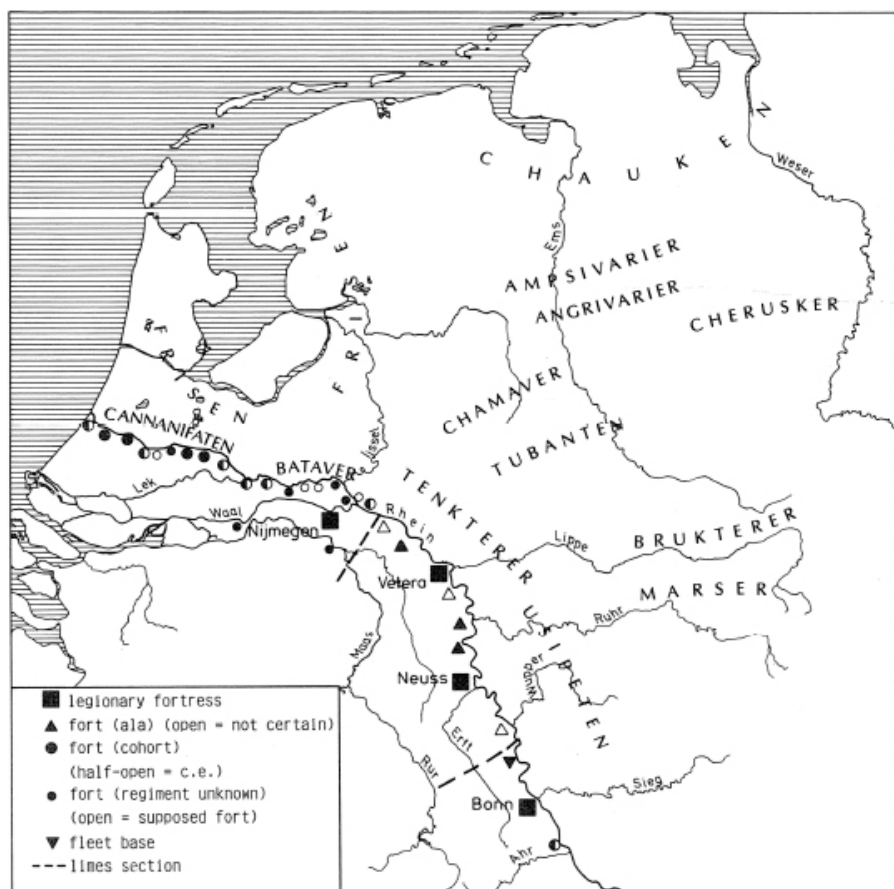


Fig. 7.2. The approximate probable territories of the native German tribes on the right bank of the Rhine in the first century AD with the frontier as it existed under Vespasian.

The reason that the occupation of Gaul could proceed so quickly was that Caesar found an adversary both socially and economically highly developed, showing a rigid social structure and a population living in proto-urban settlements. Caesar had only to corrupt the native nobility (and annihilate any uncooperative faction), and destroy the *oppida* for the opposition to be broken. However, Caesar found a totally different type of population when he attempted to conquer the Rhine. Here he came upon the Germans, who were in a state of 'ethnogenesis' (Wenskus 1961, 246 ff; 429 ff). Caesar's successors, who wanted to continue his work in the conquest of the Germanic tribes as far as the Elbe, learnt the lesson that has been repeated by colonial powers in modern times, for instance by the Dutch (Fieldhouse 1965, 278 ff) in Java (with kingship), and Borneo (with headhunters): that the low level of social development that existed among the German tribes when compared directly to the Celts protected them from annexation. Victory over a single tribe or confederation created no long term permanent solution, especially since the tribal seat regularly shifted its position (for example Tacitus *Germania* 33, 36; *Annals* 55ff).

We may also look at Germanic society during this period, in order to describe its essential traits (Wenskus 1961, 272 ff; 305 ff; 339 ff). Of course Tacitus' *Germania* gives even more information about the central authority (such as the *reges*, *principes*, etc.) and social stratification (*nobilitas* – *servi*); moreover, archaeological research shows that a privileged class was already in existence in the northern Germanic areas in the first century BC. Note for instance the rich chariot burials such as Langaa and Husby (Raddatz 1967) or the complex at Hodde (Hvass 1975) which were clearly set apart from other settlements. On the other hand, it is again striking just how much influence the people themselves had (*Germania*, 11). Quite clearly, the development of central authority differed between the individual tribes: the Chatti (*Germania*, 30), the Marcommani and the Quadi, for example, appear to have been particularly developed (*Germania*, 42). In general, however, the position of central authority within the Germanic tribes does not appear to have gone unchallenged. There appear to have been physical sanctions taken against tribal elements with pretensions towards 'classical' authority, as Tacitus twice mentions (*Germania*, 7, 11). It appears that the Germanic tribes of the first century AD still comprised segmented and acephalous groups (Sigrist 1979). These factions, like the assimilated tribes, were forced into existence by frequent migrations. The

development of authority and the rise of central control were frequently successful, but as Langaa and Hodde have shown, this was not exclusively a result of contact with the more developed Celtic and Roman worlds.

One aspect of this can be seen through Galtung's model which suggests that the more developed the social structure of the periphery, the easier it is under normal circumstances to occupy the area. Rome succeeded in establishing a bridgehead to the Germanic nobility, in so far as they existed at all, on only a few occasions. These events emphasize the varied development of the *Limes* as a flexible response to the existing situation in the *Vorfeld*: we are not suggesting that an incorrect evaluation of the situation led to a *volte face*, but rather that the failure was a result of the poorly developed native social stratification. The fact remains that a certain level of development had to be reached not only for a permanent occupation, but also for the ultimately successful integration of the conquered territory. With this theme, we return to the initial subject of our study, the Lower Rhine *Limesvorland*.

The problem of a client zone on the Lower German Limes

Against the background of the previous discussion, we would like to conclude by looking at whether or not the Lower Rhine *Limesvorland* and the area to the east can be seen as a client zone. According to Luttwak (1976, 20 ff.), whose strategic theories have yet to be accepted by German scholars, a structural change from 'hegemonic' to 'territorial' empire developed through the Principate. Such a 'hegemonic' empire, characterized primarily by a client zone extending forward from the frontier with limited responsibility for defence, has been identified by Willems (1986, 223, 230) as existing until the reign of Claudius. Until AD 47, the emperor prohibited the subjugation of the Frisii and Chauci by his provincial governor Cn. Domitius Corbulo and established the Rhine as the frontier instead. Despite these events, which exhibit all the features of a relationship with a client power (which then finally failed), we must ask whether this system really existed everywhere on the Lower German *Limes*.

In the Lower Rhine and the immediate area to the east, Klose (1934, 135 ff.) saw a client relationship – in Galtung's terms – through a bridgehead between Rome and the following German tribes: the Batavi, the Cannanifates, the Frisii, the Chauci, the Bructeri and the Cherusci. The first thing to note is that only a few of the German tribes which occupied the zone with which we are concerned are mentioned. Klose failed to name, for instance, the Usipetes, the

Tencteri, the Marsi, the Tubantes, the Chattuarii or the Chamavi in the Lower Rhine area (Fig. 7.2). Theoretically, of course, the poor survival of the historical record may be the reason why no client relationships with the latter tribes are known to us, although their otherwise apparently belligerent relations with Rome makes this unlikely. The possibility of a client zone in the Lower German *limes* is thus ruled out. It remains, however, striking that the north of Germania Inferior, as well as the territory in front of the *limes*, was inhabited by tribes which conducted peaceful relations with Rome over a long period. Here we are dealing with the first four tribes listed by Klose.

In the north the Batavi and Cannanifates were regarded as *gentes foederatae* but were still incorporated into the Empire to a large degree, that is as members of the Empire (Klose 1934, 21, 27). Similarly, the Frisii, who had settled in the east, were also regarded as members of the Empire. This continued not only up to the time of Corbulo's retreat, but at least into the Neronian period, when two representatives of the nobility were awarded rights of Roman citizenship by the Emperor (Tacitus *Annals* 13, 54). Here we would like to see a true client relationship in the *Vorfeld*, without specifying its ultimate lifespan. Since the North Sea coast which was inhabited by the Frisii, lost its military significance in the course of the first century, the task of securing this section of the *limes* was no longer of importance. That the north-eastern neighbours of the Frisii, the Chauci, became clients through conquest in AD 5 is certain. However, after the Romans fell back to the Rhine in AD 47, distance prevented them from maintaining this relationship. So much for the north of Germania Inferior and its *Vorfeld*.

In the southern *Vorfeld*, Klose (1934, 45, 47) regarded only two of the many tribes as clients, the Bructeri and the Cherusci. They are, however, close to being clients in a real sense: in both tribes there were temporary pro-Roman factions which endeavoured to install puppet kings controlled by the Empire. These, ultimately unsuccessful, attempts demonstrate Rome's interest in manipulating the buffer zone in which the Bructeri and the Cherusci remained enemies and could, in the final analysis, be turned against the military. Thus a client zone existed, although only in its preliminary stages of development.

From the above it is clear that the *Limesvorland* displays varying infrastructures. It is hardly surprising that these differences are repeated in the establishment of the *Limes* itself, which was certainly only a reaction to the existing situation: the *Limes* was an indicator of the situation in the *Vorfeld* and vice versa. As is well known, the Lower German frontier demonstrates a tripartite build up (the

legionary bases are irrelevant in this context):

- the southern sector occupied by cohorts (Remagen to Cologne)
- the middle sector exclusively *alae* (Cologne to Altkalkar/Rindem)
- the north-west sector exclusively cohorts (Herwen to Valkenburg/Katwijk)

The occupation of the middle sector solely by cavalry shows that it was the most threatened part of the frontier, as is also demonstrated by the Frankish assaults of the third century. In contrast to the north-eastern *Vorfeld*, no client relationship existed with the Germans who were able to establish a buffer zone. The previously mentioned environmental barriers of this sector also, ultimately, proved unsuitable for the defence of the frontier (Gechter 1979). While controls and influence became more difficult in the *Vorland* and in the area occupied on its border, the restrictions were not so stringent that they prevented determined opponents from fulfilling their intentions.

Acknowledgements

This paper was produced at the request of the conference organizers to whom I am grateful for ensuring its translation by Karen Waugh.

References

- Alföldy, G. 1968 *Die Hilfstruppen der römischen Provinz Germania inferior*, Düsseldorf (Epigraphische Studien 6)
- Allen, D. F. and Nash, D. 1980 *The Coins of the Ancient Celts*, Edinburgh
- Bloemers, J. H. F. 1983 *Periferie in Pre-en Protohistorie*, Amsterdam
- Clarke, D. L. 1972 'Models and paradigms in contemporary archaeology', *Models in Archaeology* (ed. D. L. Clarke), London, 1-60
- Dobesch, G. 1980 *Die Kelten in Österreich nach den ältesten Berichten der Antike*, Wien
- Fieldhouse, D. K. 1966 *The Colonial Empires: a comparative survey from the eighteenth century*, London
- Forrer, R. 1968 *Keltische Numismatik der Rhein-und Donaulande*, (second edition), Graz
- Galtung, J. 1972 'Eine strukturelle Theorie des Imperialismus', *Imperialismus und strukturelle Gewalt. Analysen über abhängige Reproduktion*, (ed. D. Senghaas, Frankfurt, 19-104)
- Gechter, M. 1979 'Die Anfänge des Niedergermanischen Limes', *Bonner Jahrbücher* 179, 1-138
- Hvass, S. 1975 'Das eisenzeitliche Dorf bei Hodde, Westjütland', *Acta Archaeologica* 46, 142-58
- Joachim, H. E. 1987 'Kaiserzeitlich-germanische und fränkische Brandgräber bei Troisdorf, Rhein-Sieg-Kreis', *Rheinische Ausgrabungen* 27, 1-39
- Kahrstedt, U. 1950 'Methodisches zur Geschichte des Mittel-und Niederrheins

- zwischen Caesar und Vespasian', *Bonner Jahrbücher* 150, 63-80
- Kiechle, F. 1962 'Das Giessener Gräberfeld und die Roile der Regio Translimitana', *Historia* 11, 171-91
- Klose, J. 1934 *Roms Klientel-Randstaaten am Rhein und an der Donau. Beiträge zu ihrer Geschichte und rechtlichen Stellung im 1. und 2. Jahrhundert nach Christus*, Breslau
- Kolník, T. 1986 'Römische Stationen im slowakischen Abschnitt des nordpannonischen Limesvorlandes', *Archeologické Rozhledy* 38, 411-34; 467-72
- Kunow, J. 1987 'Das Limesvorland der südlichen Germania inferior', *Bonner Jahrbücher* 187, 63-78
- Kunow, J. 1987a 'Die Militärgeschichte Niedergermaniens', *Die Römer in Nordrhein-Westfalen*, (ed. H.G. Horn), Stuttgart, 27-109
- Luttwak, E. N. 1976 *The Grand Strategy of the Roman Empire*, Baltimore
- Marschall, A., Narr, K. J. and von Uslar, R. 1954 *Die vor- und frühgeschichtliche Besiedlung des Bergischen Landes*, (Beiheft Bonner Jahrbücher 3), Köln-Graz
- Mócsy, A. 1972 'Das Problem der militärischen Territorien im Donauraum', *Acta Antiqua Academiae Scientiarum Hungaricae* 20, 133-68
- Mommsen, T. 1885 *Römische Geschichte Bd. 5*, Berlin
- Neuffer-Müller, C. 1978 'Die frmittelalterliche Besiedlung von Haffen, Kreis Wesel', *Bonner Jahrbücher* 178, 479-502
- Neumann, G. and von Petrikovits, H. 1981 'Chattwarier', *Reallexikon der Germanischen Altertumskunde, Bd. 4*, (Second edition ed. J. Hoops), Berlin and New York, 391-3
- von Petrikovits, H. 1974 'Beiträge zur Geschichte des Nieder-germanischen Limes', *Der Nieder-germanische Limes*, (eds. J. E. Bogaers and C. B. Rüger), Köln, 9-29
- von Petrikovits, H. 1978 *Die Rheinlande in römischer Zeit*, Düsseldorf
- von Petrikovits, H. 1979 'Militärisches Nutzland in den Grenzprovinzen des römischen Reiches', *Actes du VIIe Congrès international d' epigraphie grecque et latine*, (ed. D.M. Pippidi), Bucuresti, 229-42
- Raddatz, K. 1967 *Das Wagengrab der jüngeren vorrömischen Eisenzeit von Husby, Kreis Flensburg*, Neumünster
- Reichmann, C. 1979 *Zur Besiedlungsgeschichte des Lippemündungsgebietes während der jüngeren vorrömischen Eisenzeit und der ältesten römischen Kaiserzeit*, Wesel
- Rech, M. 1982 'Düsseldorf', *Bonner Jahrbücher* 182, 522-24
- Rüger, C. B. 1968 *Germania inferior*, (Beiheft Bonner Jahrbücher 30), Köln-Graz
- Sigrist, C. 1979 *Regulierte Anarchie. Untersuchungen zum Fehlen und zur Entstehung politischer Herrschaft in segmentären Gesellschaften Afrikas*, Frankfurt
- von Uslar, R. 1938 *Westgermanische Bodenfunde des ersten bis dritten Jahrhunderts nach Christus aus Mittel- und Westdeutschland*, (Germanische Denkmäler der Frühzeit 3), Berlin
- Vittinghoff, F. 1974 'Das Problem des "Militärterritoriums" in der vorseverischen Kaiserzeit', *I diritti locali nelle provincie romane con particolare riguardo alle condizioni giuridiche del suolo*, (Accademia nazionale dei Lincei 371), Rome, 109-24
- Weber, M. 1956 *Wirtschaft und Gesellschaft*, Tübingen
- Wenskus, R. 1961 *Stammesbildung und Verfassung: das Werden frühmittelalterlichen gentes*, Köln
- Werner, J. 1954 *Waage und Geld in der Merowingerzeit*, München
- Willems, W. 1986 *Romans and Batavians. A regional study in the Dutch Eastern River Area*, Amsterdam

8. Early Roman military installations and Ubian settlements in the Lower Rhine

by Michael Gechter

From the mid 50s BC after his rapid initial success in Gaul, and as a result of the Gallic rebellion, Julius Caesar felt compelled to demonstrate Roman power both to the east of the Rhine and also in Britain. He crossed the Rhine in 55 and 53 BC. The crossing most probably took place in the area of the Neuwied Basin (Neuwieder Beckens). This area, on the right bank of the Rhine, was inhabited by the Ubii. The treaty of friendship between the Ubii and Rome, which was to be so important for the Lower Rhineland during the following century, may well already have been in existence at this time (Caesar *DBG IV*, 16.5).

Amongst the most dangerous of Rome's enemies along the Rhine were the Eburones who lived in the loess region between the river and the Maas lowlands, north of the Ardennes and Eifel. In 54-53 BC, one and a half legions wintered close to their tribal capital at Atuatuca. These troops were annihilated by the Eburones under the leadership of their chief Ambiorix. In retaliation, Caesar invaded their territory in 53 BC and slaughtered the Eburonian army, plundered their land, and sold the inhabitants as slaves (Caesar *DBG VI*, 34.8). As a result of this Roman victory, the rebellion in north-east Gaul collapsed and henceforth peace prevailed in the region. Shortly afterwards, however, the revolt under Vercingetorix broke out in central Gaul.

After the annihilation of the Eburones, the situation in the Lower Rhine was as follows. The Treveri lived in the Mosel valley and the uplands of the Eifel and Hunsrück. The Ubii were settled on the right bank of the river in the Middle Rhine and Lahn valley, whilst to their north, around the Cologne Basin, were the Sugambri. Further north, in present day Holland, was the territory of the Usipi and Tencteri. The Menapii were settled in the region of the Rhine-Maas-Schelde Delta. The fertile loess in between, formerly the territory of the Eburones, is usually asserted to have remained unoccupied. In the former territories of the Eburones and Sugambri there is evidence of extensive

solitary hillforts being abandoned in the mid first century BC. These included the Alte Burg near Euskirchen-Kreuzweingarten (Eburones) and the defences on the Petersberg near Königswinter, and at Benberg near Cologne (Sugambri – Joachim 1982, 414). In addition, recent excavations have demonstrated a mid first century BC evacuation of the large lowland *oppidum* in the Hambach Forest, which had extended over an area of 200m x 170m and was defended by a rampart and ditch (Göbel and Joachim 1980, 83). Until now these four sites have provided the only known indications of the warlike incidents of 53 BC. We know of no sites dating to the period c. 50-1 BC in this region; only in the mid first century AD is a resettlement evident.

The consolidation of Roman control on the Rhine began after Caesar. It included a restructuring of native settlement, beginning in 38 BC under the governorship of Agrippa with the resettlement of the Ubii in the former Eburonian territory. At the same time the Batavi colonized the area between the Rhine and the Waal. Similarly, west of the Batavi, the present region of south Holland was colonized by the Cannenefates (Pliny *Nat. Hist.* IV, 101-106; Tacitus *Germania*, 29; *Histories* IV, 15).

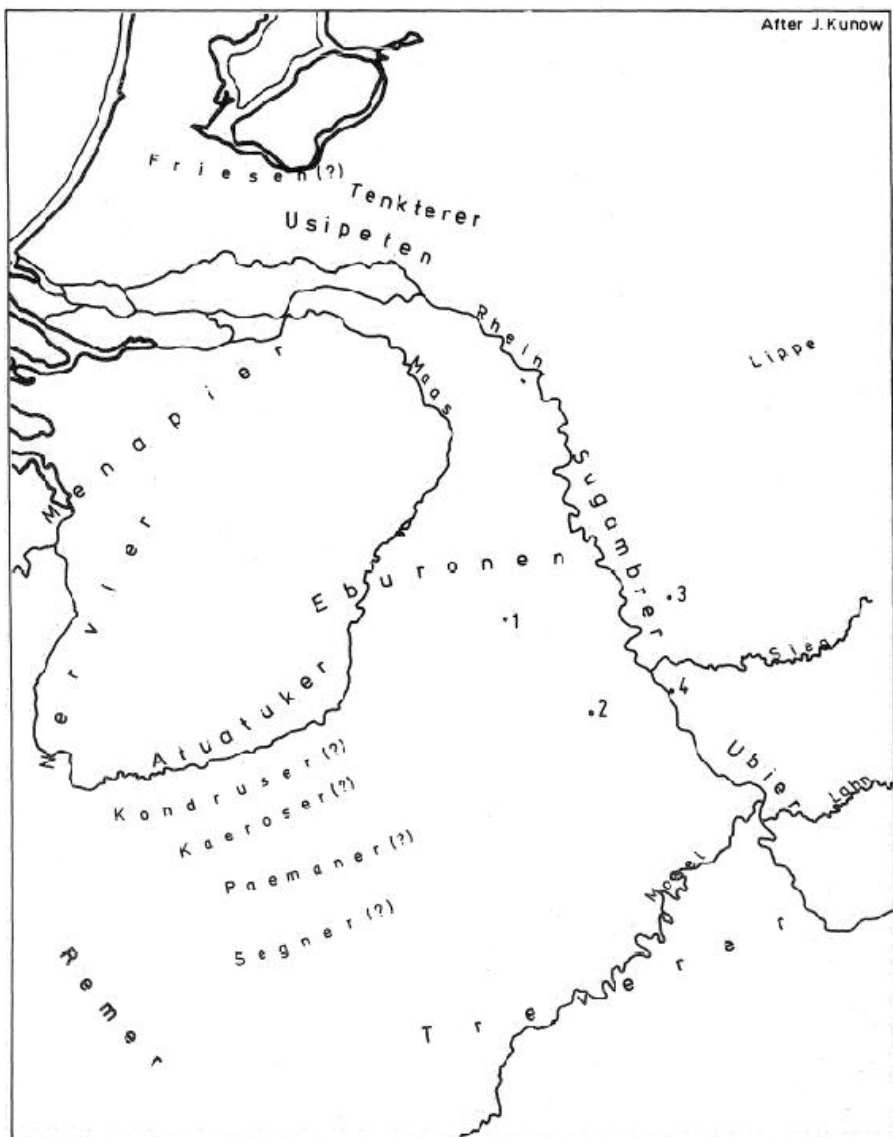


Fig. 8.1. Territories of the native tribes in the Rhineland at the time of Caesar.

Late La Tene oppida: 1. Hambach Forst (Ha 382); 2. Euskirchen-Kreuzweingarten;
3. Bensberg-Moitzfeld; 4. Königswinter-Petersberg.

Caesar's plan to conquer Germany as well as Gaul was revived by Augustus following the suppression of the Pyrenean tribes. Consequently, in 19 BC, the troops no longer needed in Spain were transferred to Belgica. This campaign was hastened with the defeat in 17-16 BC of L. Lollius at the hands of the Sugambri, who had crossed the Rhine. In the summer of 12 BC approximately a third of the whole

Roman army assembled on the Rhine for the start of the conquest. Five years later they had taken the conquest of Germany up to the river Elbe.

The Ubii had already entered history as allies of Rome. Indeed they were the only tribe to remain loyal to Rome, even during the revolt of the Batavi. Their tribal capital (Cologne) quickly attained the status of *colonia* and a provincial altar for Germany was also planned here, like that for the Three Gauls at Condate, Lyon (Tacitus *Annals*, 1.57). In contrast to the Batavi, Sugambri, Tungri, Cannenefates and Treveri we know of no Ubian nobility in the first century, and the tribe also provided scarcely any auxiliary troops for the Romans, with only two cohorts known (only one by name). Furthermore, they were the only tribe from the Lower Rhine who provided no cavalry (Alföldy 1968, 73).

Up to and including the Claudian period, we know of the following units from the tribes mentioned:

Batavi: 1 ala, 9 cohorts (Alföldy 1968, 13, 73)

Cannenefates: 1 ala, 1 cohort (Alföldy 1968, 14, 51)

Tungri: 1 ala, 4 cohorts (Alföldy 1968, 38 - ala *Frontoniana*; 73)

Treveri: 2 alae, (Alföldy 1968, 19 - ala *Indiana*; 37 - ala *Treverorum*)

Sugambri: 4 cohorts (Holder 1980, 324)

This can be interpreted in the following way. The Batavi and Cannenefates contained splinter groups - *stirps regia* from the Chatti comprising kinship groups who had previously elected the tribal chiefs (Wenskus 1961, 425). As a result of internal quarrelling, these clans migrated. Most of them were on horseback, as shown later by the mustering of mounted units from the Batavi and Cannenefates, although the Chatti themselves lacked such cavalry (Wenskus 1961, 424 citing Tacitus *Germania* 30; *Histories* IV, 12; 17).

The Ubii known to Caesar no longer had a chief. They were dependent on the Suebi and were forced to pay tribute. Caesar referred to them as *principes ac senatus* (DBG IV, 11.3). From this we can infer the presence of a tribal leader, hence what was understood as an oligarchic nobility.

On the basis of the above, it is apparent that the Ubii supplied the Roman army with the smallest number of troops of any of the tribes on the Rhine. It thus appears that the stronger the existing nobility, the more troops they provided for the Romans. This is demonstrated by comparing the Batavi with the Ubii. If it is correct to equate the Batavi with the former noble stratum of the Chatti who provided their chief, then the Ubii must be taken to represent exactly the opposite.

Finally, looking at this from another angle, it means that the Ubii were resettled by the Romans without their former nobility.

The nobility seems to have been destroyed as a result of battle or through social unrest before their first contact with Rome. The early readiness of the tribe to conclude treaties of protection and mutual assistance with Rome cannot otherwise be explained (Caesar *DBG IV*, 16.5). This must surely have had something to do with the tribe's dependence on the Suebi. It is possible that the Ubian nobility was destroyed in battle with them (Caesar *DBG IV*, 3.4). Nevertheless, the social structure of the tribe must still have been sufficiently pronounced to enable a pact with Rome to have been achieved (Kunow, this volume). It was not however, so developed that any tribal leader was appointed commander of the troops. On the other hand, they were important enough to have attracted the support of the Romans. It is also possible that the Ubii themselves could not survive without aid from Rome. As the Germanic group on the Rhine who intervened on Rome's behalf, they were rewarded commensurately.

In this respect, it would not be surprising if the earliest traces of Roman troops on the Lower Rhine were to be found on Ubian territory. It has been known for a time that a Roman camp existed at Neuss from 16 BC. We now have evidence of a similar camp at Bonn, also in Ubian territory.

Neuss

The earliest camp (A), had an extent of c. 250 x 500m and could therefore accommodate half a legion. It lay on the lower terrace of the Rhine between that river, the Erft Valley and a marshy former course of the river Erft (Meertal), thus in a well protected position. Excavations have produced not only the earliest imported Italian pottery dating to around 16 BC, but also native late La Tène pottery. Since similar pottery had not previously been found, these finds were not interpreted as pottery from a native settlement (hitherto unpublished; Gechter 1979, 100).

Bonn

The earliest camp in Bonn lay on a lower terrace protected from high water, between the Rhine and a surrounding marshy former course of the river, again in a protected position. The extent of this camp is uncertain although it does not seem as large as that at Neuss. The latest excavations have revealed evidence of a preceding native settlement – four late La Tène *Grubenhäuser* and a contemporaneous

kiln were found. The pottery from the settlement and kiln can be dated to the 30s BC (Gechter 1985, 121). A re-examination of the evidence from the early camp at Bonn, previously interpreted as an auxiliary fort, has shown that there was only a palisade and no ditch. Late La Tène pottery was also found in this area. It therefore seems not to have been a Roman camp (new interpretation previously unpublished, for the site see Gechter 1979, 79). The finds from Bonn can therefore be interpreted as a lowland *oppidum*, located in a geographically very protected area, and founded around 30 BC. In 16 BC, the settlement was occupied by the Roman military.

A similar interpretation should be assumed for Neuss. In both cases we have a native settlement – although at Neuss as yet no physical remains – developing in protected positions on the Rhine. In 16 BC both places were occupied by the military, although the native settlements may well have continued. In 12 BC the military vacated their positions, returning again around the turn of the century. Both these forts on the Lower Rhine almost certainly originated as reconnaissance camps for the projected campaigns of 12 BC. They lay in Ubian territory at an *oppidum* at Bonn, and on something similar at Neuss. This again illustrates the great significance of the Roman-Ubian treaty of friendship, and Rome's confidence in it.

In contrast the true settlement of *oppidum Ubiorum* (Cologne) seems to have been founded later. No pre-Roman pottery has yet been found in the Cologne area (H. G. Hellenkemper, pers. comm.). The early Roman camp there was first established c. 5 BC (Gechter 1979, 96). It is significant that this settlement with its native settlement was founded by the Romans. The following points are significant: the position in an open area without any natural protection, but with an offshore island in the river (the harbour). This contrasts directly with the defensive river terrace positions of the earlier sites at Bonn and Neuss.

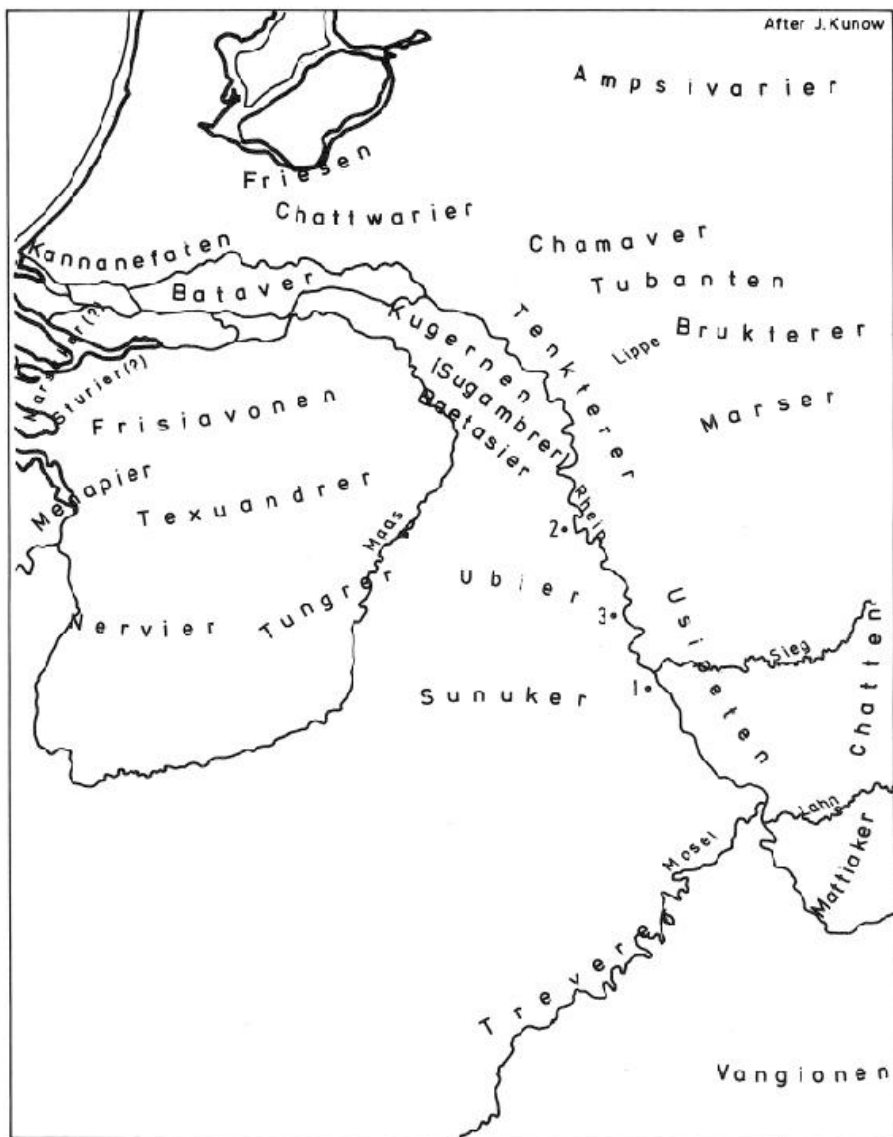


Fig. 8.2. Territories of the native tribes in the Rhineland at the birth of Christ.

1. Bonn; 2. Neuss; 3. Köln.

In conclusion we can see that the Ubii, who were resettled by Agrippa, had a different social structure from the other Germanic tribes on the Rhine. Their former nobility seems to have been absent. They had probably already been deprived of power before Caesar's arrival, through external pressure or internal unrest. The new élite which made a pact with Rome appears to have been made up from a lower nobility or 'merchant class'. In any case, they did not behave in

the same way as the upper strata of the other tribes, for example serving as troop commanders. This is also illustrated in the modest number of Ubian units in the pre-Claudian period.

In contrast, the contact with Rome was so strong that the earliest reconnaissance camps for the projected German campaigns were situated in Ubian territory. These places carry un-Roman names (Bonna, Novaesium). To compare with this, the later capital of the Ubii at Cologne bears the artificial name *oppidum Ubiorum*. Here the tradition of native placenames is lacking. Nevertheless, the site was looked upon by Rome as the location for the Altar of Germania. Relatively quickly, c. AD 50, it attained the status of colonia. Hence it shows clearly the special treaty relationship that the Ubii had with Rome from the time of Caesar.

Acknowledgement

This paper was translated from the German by Karen Waugh.

References

- Alföldy, G. 1968 *Die Hilfstruppen in der römischen Provinz Germania inferior*, Düsseldorf (Epigraphische Studien 6)
- Gechter, M. 1979 'Die Anfänge des Niedergermanischen Limes', *Bonner Jahrbücher* 179, 1-138
- Gechter, M. 1985 'Ausgrabungen in Bonn in den Jahres 1983/43', *Ausgrabungen im Rheinland 1983/84*, 121-8
- Göbel, J. and Joachim, H. E. 1980 'Eine befestigte Spätlatènesiedlung im Hambacher Forst (Hambach 382)', *Ausgrabungen im Rheinland 1979*, 83-5
- Holder, P. A. 1980 *Studies in the Auxilia of the Roman Army from Augustus to Trajan*, Oxford
- Joachim, H. E. 1982 'Die Ausgrabungen auf dem Petersberg bei Königswinter', *Bonner Jahrbücher* 182, 393-440
- Wenskus, R. 1961 *Stammesbildung und Verfassung: das Werden der frühmittelalterlichen gentes*, Köln

9. By the northern shores of Ocean¹ Some observations on acculturation process at the edge of the Roman world

S. D. Trow

‘It (Britain) has peoples and kings of peoples, but they are all uncivilized and the further they are from the continent the less they know of other kinds of wealth, being rich only in herds and lands....’

Pomponius Mela, *De Chorographia* II, 6 (85)

Introduction

Britain is better served than most other provinces of the Roman empire in studies of conquest, colonization and the process of cultural interchange between victor and vanquished. Recent works have addressed these themes either generally (Burnham and Johnson 1979), or more specifically, eg. in terms of military/civilian relations (Blagg and King 1984) or rural development (Miles 1982). In addition, an increasing range of regional studies is becoming available. Against this backdrop, this paper is intended to explore the relationship between the intensity of long-distance trading contacts, the disposition of high status settlements and the growth of urban centres. Although the topics under discussion may seem rather diverse, all three are sensitive indices of the rate and degree of the Romanization of Britain and all lend themselves to techniques of archaeological investigation.

Particular attention will be paid to differential rates of development between south-eastern England and the surrounding zone comprising East Anglia, the Midlands and western England, both before and after the Roman Conquest. That major differences in the nature and organization of native British society existed between these areas has long been recognized and a particularly useful model utilizing the concept of core-periphery relations to explore the divergent but interrelated development of these zones has recently been proposed by Haselgrove (1982 and 1984,32-3).

The nature, extent and intensity of pre-conquest trade

The transition from Dressel 1A to IB amphorae and the possible causes of the apparently synchronous increase in the volume of imports entering south-eastern England have been discussed at length (eg. Cunliffe 1982, Fitzpatrick 1985 and Williams 1981) and need not be rehearsed here. Perhaps more significant than the increasing level of wine, oil and sauce importation in the post-Caesarean period is the introduction of a whole series of accessories relating to the *etiquette* of eating and drinking. The demand for a range of ceramic and metal vessels, particularly jugs, cups and strainers, as well as fine tablewares and mortaria (Partridge 1981) suggests that alongside a fondness for wine amongst the British élite, a desire had developed to emulate Roman fashions in the preparation and consumption of food and drink.

To a considerable extent, the presently perceived distribution of these imports is a reflection of the variation in burial practice apparent in pre-conquest Britain (Whimster 1981). Although recent settlement excavation has both increased the range of items attested on domestic sites and augmented the overall distribution, the majority of prestigious imports occur in the accompanied cremation burials of south-eastern England. Archaeologically 'visible' categories of import other than ceramics and amphora-borne commodities include glass vessels, brooches (Bayley and Butcher 1981) and other bronzes (Potter and Trow 1988), worked bone (Greep 1983) and possibly engraved gemstones (Trow 1982a).

Despite these additional sources of evidence, fine ceramics and amphorae, by virtue of their comparatively frequent occurrence and post-depositional durability, remain the principal medium for determining trading contacts between pre-conquest Britain and the continent. Of necessity, therefore, it is largely this material which is used as an indication of the rate and extent to which prestigious commodities were becoming available to differing sections of British society.

Recent work has considerably extended the number of findspots of Augusto-Tiberian tablewares both of Gallic and Italian origin. A dense concentration in the Hertfordshire/Essex region, best exemplified by the major assemblages from Braughing (Rigby 1981 and 1988a) and Camulodunum (Hawkes and Hull 1947), is complemented by a more attenuated distribution across the Midlands, West Country and south of the Thames. Augustan material has recently been recognized at Oare and Casterley, Wiltshire; Boxgrove, Sussex (Bedwin and Orton 1984 and Rudling forthcoming); North Cerney, Glos. (Rigby 1988b);

Leicester; and Silchester, Hants. (Fulford 1986) although it is only at the last site that material is occurring both in quantity and in unambiguously pre-conquest deposits. Elsewhere the possibility of the post-conquest arrival of old stock, though unlikely, cannot be wholly ruled out.

Within the gross distribution of early Gaulish imports, a particularly early group of material – a range of micaceous platters, jars and flagons originating from Central Gaul – can be discerned (Rigby and Freestone 1986). Examples have been recognized at Baldock, Canterbury, and Leicester and in larger quantities at Silchester, Camulodunum, Braughing and Verulamium as well as in several Welwyn-type burials. That imported finewares were apparently arriving as early as 25 BC begins to provide some insight into the dynamics of the exchange in prestige items affirming the pre-eminence of the Hertfordshire/Essex region and, on the basis of recent evidence, Hampshire. This is reflected not only in the early appearance of these wares but also in terms of the variety of sources of supply and, it could be argued, sheer quantity. Additionally, within these areas, it would appear that ceramic imports were not restricted to major nucleated settlements and were also available on smaller sites, such as Kelvedon, Essex (K. Rodwell 1979) and Owslebury, Hants. (Collis 1970, 257). Beyond the south-east the evidence, although limited, suggests a different pattern of availability. High status centres such as Bagendon/North Cerney and Dorchester-on-Thames appear to receive limited fineware supplies from the Tiberian (possibly Augustan) period onwards. These imports do not seem to have escaped the ‘gravitational pull’ of the major centres, as smaller farmsteads in the region such as Frocester, Glos., Claydon Pike (Miles and Palmer n.d.) and Barton Court Farm, Oxon. (Miles 1986) do not appear to establish fineware supplies until some time after the conquest.

Although concentrations of imported prestige items reflect the increasing wealth of native centres, the absence of such imports need not indicate a lack of prosperity. Social, political or religious motivations might cause the deliberate exclusion of imported prestige items – Caesar, for example, records that in Gaul the Nervii banned the import of wine and other luxuries, which they believed would impair their courage (*Bell. Gall.* II, 15, 4). In Britain, East Anglia provides an example of an area in which the manifestation of wealth and influence was articulated through insular traditions rather than imported exotica. Generally, the paucity of imports in Suffolk and Norfolk stands in stark contrast to the remarkable concentration of

gold-alloy neck-torcs and coin hoards recovered from the area. Similarly, although requiring the mobilization and large-scale consumption of both material and human resources in its construction, the recently excavated conquest period settlement at Thetford, Norfolk (Frere 1983, 308-9: excavator T. Gregory) is impoverished in terms of imported finewares (Rigby pers. comm.)

The comparable absence of imported items in western Britain has recently been addressed by Daphne Nash (1984) who suggests that imported prestige items were necessary to sustain the expansive societies of the south-east because of the inherent instability of their social structure. Amongst the pastorally-based societies of the west prestige, goods were largely an irrelevance. In the light of this suggestion it is worth reiterating the observations of Pomponius Mela (*supra*).

The mechanism for cross-channel exchange remains obscure. By analogy with continental evidence, Haselgrove (1984, 29-30) has highlighted the probability of archaeologically 'visible' colonies of continental traders in pre-conquest Britain. Positive identification of such settlements is still lacking, but the precociously Romanized centre at Braughing-Puckeridge, Hertfordshire is perhaps the foremost candidate amongst known British sites. Excavation at a number of locations within the complex has revealed a series of Augusto-Tiberian deposits which contain items of imported bonework (Greep 1983), glass, bronze toilet implements, iron styli (Potter and Trow, forthcoming) and mortaria as well as the more conventional ceramic and amphora-borne commodities (Partridge, 1981). The site also produced a series of legible graffiti from sealed pre-conquest deposits including an example inscribed 'Graecus' (Partridge 1982a).

On the basis of epigraphic evidence it has been suggested (Middleton 1979) that long-distance bulk trade in Gaul was primarily linked to the demands of the Roman military garrison, with civilian requirements insufficiently developed to sustain large-scale trading activity by Gallic and Mediterranean merchants. This minimalization of the role of continental entrepreneurial activity has important implications for both the mechanics and the intensity of the movement of prestige goods into pre-conquest Britain and suggests that such goods were more likely to arrive in the guise of diplomatic gifts or bribes rather than as freely-traded items. If this is the case, colonies of foreign craftsmen and 'merchants' such as that tentatively proposed at Braughing-Puckeridge would have been subject to a high degree of direct political control. It is therefore no surprise that the Braughing complex has also produced a quantity of British 'coin

moulds'.

An appreciation of the true volume of pre-conquest exchange in luxury goods is bedevilled by the absence of published sealed pottery groups quantified in a manner which allows comparisons of the fine pottery supplies between different sites to be drawn. Until detailed ceramic quantification independent of the overall volume/area of the excavation are available, it will not be possible to comment in detail on the incidence of pre-conquest imports either intra- or inter-regionally. Equally importantly, with only a small proportion of the archaeological resource sampled, it has not yet been possible to gain an impression of the *overall* quantity of material entering Britain, although there are indications that the trade in such items may have been sporadic and non-systematic. A detailed study of potters' stamps on Gallo-Belgic pottery by Valerie Rigby has demonstrated the low representation of each die impression within Britain (Rigby 1978, 198-9). This can be interpreted as indicating that Gaulish wares were arriving in small quantities, perhaps as make-weights amongst other traded items, rather than in large batches directly from the production centre. Current figures suggest an even lower quantity of pre-conquest terra sigillata entering Britain (Rigby 1986).

That the wide distribution of ceramic imports signifies the movement of other, archaeologically invisible materials cannot be doubted. The nature of this trade is, of course, unknown but it may well have involved spices and other foodstuffs in organic containers, textiles, livestock and, in addition, the exchange of specialist information and expertise. However, the exchange of information was not inextricably linked to the circulation of prestige goods as Jones (1982) has demonstrated in terms of certain agricultural innovations.

The apparently small quantity of pre-conquest imports penetrating beyond south-eastern and central southern England does serve to illustrate that those areas were in contact, albeit indirectly, with the continent and that we can, therefore, expect to find evidence for the reciprocal mobilization of resources for export. This assumption is supported by Strabo's allusion to the valuable tribute levied on British commerce (*Geog.* II, 5, 8). Although there is no reason to regard it as comprehensive, Strabo's checklist of exports and imports still occupies a central position in any discussion of economic relations with the continent. In his recent analyses of late Iron Age social development in the south-east, Haselgrove (1982 and 1984) stressed the role of the peripheral zone – the tribal lands of the Durotriges, Dobunni, Corieltauvi and Iceni – in the supply of the commodities destined for export. It would appear that native British coinages played little part

in the mechanics of this exchange. The tribal issues of the peripheral zone shows little overlap with those of the south-east suggesting that their function concerned the maintenance of intra- rather than inter-tribal social relationships.

The difficulties in recognizing stimulated production of resources for exchange is well illustrated by considering the case of the Dobunni, frequently regarded as the classic 'middlemen' of late Iron Age Britain, controlling access by south-eastern polities to Welsh gold, Forest of Dean iron and Mendip lead and silver. At face value, there would appear to be considerable evidence for large-scale exchange of iron. Iron was specifically mentioned by Strabo amongst his list of exports and Caesar's mention of the British use of *taleae ferreae* as a form of exchange (*Bell. Gall.*, V, 12,4.) has led to the adoption of the term 'currency bars' for the striplike ingots typical of the later Iron Age. These references are particularly intriguing in the light of the distribution of 'currency bars' which is essentially western and therefore outside Caesar's south-eastern theatre of operations (Allen 1967, figs. 1 and 2). In the absence of any known alternative method for the transportation and exchange of iron it can be suggested that the present distribution pattern reflects the limits of *hoarding* rather than *use* or *exchange* of the bars and, as such, records a difference of cultural attitudes to the storage of wealth between the south-east and areas to the north and west.

Little evidence exists as yet for the pre-conquest extraction of gold and lead deposits in Wales and the west of England. Hengistbury Head appears to have been involved in the refinement of silver (Northover 1987), possibly from lead ores of Mendip origin, and the rapidity with which this resource was utilised under the Romans – lead ingots dated as early as AD 49 – implies a degree of earlier exploitation. The ready availability of silver, illustrated by the copious silver coinages of the Dobunni, Durotriges and Icenii, may hint at exchange patterns amongst the peripheral tribes not readily discernible amongst other categories of evidence. The Dobunni also minted considerable gold issues at least as late as the conquest, suggestive of access to if not control over gold supplies from Wales. Gold, also listed by Strabo, was certainly reaching the south-east in considerable quantities. The enormous coin issues of Cunobelinus and Verica alone represent over 6,000 kg of base gold most of which, Allen believed, originated from a single ore source (Allen 1975; Allen and Haselgrove 1979). The contemporary diminution of the Icenian gold issues (Allen 1970, 11) implies that the increase was created at the expense of other pre-existing patterns of supply.

Prominent amongst Strabo's list of British exports are several types of farm produce cattle, hides and corn. Certainly, in terms of agriculture, the late Iron Age witnesses a considerable intensification of agricultural activity. Within the Dobunnian tribal area this is best exemplified by the work of the Oxford Archaeological Unit in the Upper Thames Valley where excavation and aerial survey have demonstrated the development of a highly organized landscape of enclosures, fields and trackways (Jones and Miles 1979). This increased preoccupation with land division is accompanied by the appearance of new types of farming unit such as those at Claydon Pike and Barton Court Farm (Miles 1986) on sites which continue to be occupied into the Roman period. In most respects the century preceding the Roman conquest was more agriculturally innovative than that following (Jones 1981). Whether the intensification of production was stimulated by internal pressures such as an increase in population or through external factors such as the need to create the surplus for export attested by Strabo is uncertain. No doubt the adoption of new farming techniques through the exchange of information and possibly the acquisition of improved breeds was a major factor in the ability to raise levels of productivity.

Continental influences may well be apparent in the sphere of animal husbandry. Anthony King (1984) has drawn attention to the fact that animal bone assemblages from the major nucleated settlements of the south-east demonstrate an essentially Gallic dietary preference towards pig and cattle and away from sheep. It is quite possible that the conscious desire to emulate 'Romanized' eating habits reflected in the importation of wine, sauces and tableware was also influencing the nature of animal husbandry in certain areas.

Trade after the conquest

Measured in terms of access to imported luxury goods, it is apparent that the first decades after the conquest witnessed considerable economic expansion. Several major nucleated settlements appear to have originated or experienced an intensification of activity during the same period. At Camulodunum, those areas sampled by excavation exhibit an increase in industrial activity (Niblett 1985) and demonstrate an increase in material wealth. Further west, at Bagendon, Glos. the majority of the excavated material belongs to the Claudian and Neronian periods and the rate of deposition of coins, brooches, glass vessels and fine pottery vessels increases considerably during the lifetime of the site (See Clifford 1961, 115, 185, 199-200 and 209-10). Newly recognized *oppida*-type settlements at Stonea,

Cambis, (Potter and Jackson forthcoming) and Redcliff, Humberside (Crowther 1987) are characterised by a surge of activity in the Claudian and Neronian periods. Interestingly, Bagendon and Redcliff lie close to the rivers Severn and Trent/Humber which may mark a hiatus in the Roman advance (Tacitus *Annals* XII, 31). It seems probable that such sites functioned as 'gateway communities' involved in the channelling of prestige items to areas outside the occupied zone, along pre-existing trade routes. Further advances by the Roman military would have deprived such communities of their *raison d'être* and the date of their decline corresponds to such a possibility. A similar involvement with the increased volume of exchange may also have precipitated the rapid growth of the Stanwick, N. Yorks, complex in the years after the Roman invasion of southern Britain (Haselgrove and Turnbull 1983, 1984 and 1987).

The nature of the stimulus provided by the Roman conquest to interprovincial and inter-regional trade has been the subject of recent discussion. Hopkins (1980) has proposed that the imposition of taxation and rents by the Roman state in 'economically unsophisticated regions' would, of necessity, have induced surplus production and thus stimulated the economy and increased the flow of trade. The army in particular has been identified as the major catalyst in the economic reorientation of Britannia, not only as the principal consumer of tax contributions but also through its role as a customer for Romanized imports (Middleton 1979). Additionally, as the most significant source of Roman coinage entering the province, the military is perceived as playing a crucial role in allowing the British economy to articulate with that of Rome (cf. Drinkwater 1983). In contrast, by postulating a relatively low level of tax contribution from Britain and by stressing the likelihood that some form of tribute was already being levied by native élites prior to the conquest, Millett (1984) has questioned the assumption that Roman taxation substantially stimulated the British economy.

Accepting Millett's argument (although see Fulford 1984, 130) an alternative model for the apparent economic upswing must be sought rather than seeking the explanation wholly in terms of the increased demands of taxation and rent. An hypothesis based on the disruption of the existing pattern of social relations can be offered. In the immediate post-conquest period, the newly established provincial administration would have had a vested interest in underpinning the authority of those sections of the native aristocracy favourably disposed to, or at least reconciled to, Roman rule. Despite this, the

inevitable post-conquest influx into southern Britain of merchants and traders, even if on a small scale and primarily interested in servicing military requirements (Middleton 1979), would have had a severely disruptive effect on an élite previously dependent on controlling access to prestige goods. By the Neronian period, imported luxury items of a type previously available only to the upper echelons of society were appearing on a wide range of Romano-British settlements (cf. Millett 1980, fig. 23 A-B). It seems probable that the prestige value of such items declined in inverse proportion to their availability. That such a dislocation did take place after the conquest may be signified by the apparently rapid decline in the numbers of those lavishly furnished cremation burials which typify the late Iron Age of central-southern and south-eastern England. The burials which do perpetuate the tradition into the post-conquest period display a marked decrease with time in the variety and intrinsic value of their grave goods (Millett 1987). In addition to these stresses, the opportunity for native aristocrats to establish new clientage relationships *beyond* Britain and the access to professional moneylenders (Dio, LXII, 2, 1) operating outside the existing network of social relationships would have considerably raised the level of economic activity within the province.

Urbanization and the problem of oppida

Attitudes to the degree of urbanization in pre-conquest Britain revolve around the contrasting perceptions of prehistorians and Romano-British archaeologists and their divergent definitions of urban settlement (compare Collis 1979 and Hassall 1979). This non-coincidence of viewpoints has hampered attempts to assess effectively the native contribution to the process of urbanization in Britain.

It is now accepted that some Iron Age hillforts exhibited certain urban characteristics density of occupation, 'zoning' of activities, proportionately greater industrial and storage capacities than surrounding smaller sites, and a possible administrative role. The decline of hillforts over much of southern England, apparently in favour of more accessible low-lying settlements, has led to the assumption that these later sites were also at the apex of a hierarchy of settlement types and fulfilled a similar range of activities. Unfortunately, the precise status of these so-called *oppida* remains obscure, the term itself posing considerable problems due to its non-systematic usage, both by classical and modern writers (see Saunders 1982). Modern use of the term *oppidum* tends to conflate a variety of site types including major hillforts, defended low-lying sites and open

nucleated centres, and the grouping together of morphologically similar sites implies an unproven similarity of function, obscuring regional differences in their nature and development.

The presence or absence of 'defences' particularly clouds the definition of *oppida*. The high-status nucleated settlements of southern England include ostensibly undefended sites such as Braughing-Puckeridge, Herts, and Prae Wood/Verulamium as well as the dyke- enclosed complexes at Camulodunum, Chichester and Silchester. By analogy with the latter group, other linear dyke complexes, for example the Oxfordshire Grim's Ditch dyke system, have been defined as *oppida* (Jones and Miles, 1979, 318) although evidence of nucleated or prestigious settlement within the dyke circuit is not yet available. Known linear dyke complexes are largely confined to southern England at present, except for the major site at Stanwick, North Yorkshire. Newly identified candidates for the status of *oppidum* include examples at Ilchester, Somerset (Leach and Thew 1985), Stonea, Cambs. (Potter and Jackson, forthcoming) Gussage Hill, Dorset (Bradley 1984, 153-4), and possibly Dorchester (Sparey Green 1986), although the contrasting nature of these sites further devalues the usefulness of the term. Concentrations of British coins or early imported finewares from several Romano- British towns suggest that other examples await discovery.

During the 1970's analogies with continental, particularly Gallic, sites led to the assumption of a comparable level of urban development for British *oppida* (Cunliffe 1976). Recent assessments (eg Haselgrove 1982, 87, note 7) have been more circumspect, or have stressed the non-urbanized nature of *oppida*:

'The largest noble settlements in a warrior society were ... in all likelihood the inflated households of the dominant nobility, attached to their estates, and might take the form of rambling establishments with internal pasturage for sheep, cattle and horses, and space for the accommodation of variable numbers of dependants and visitors.'

(Nash 1984, 101)

Although an increasing number of British *oppida* have been sampled by excavation, work has generally been on a small scale in proportion to the overall area of the settlement. In addition, given the undoubted degree of intra-site variability and the non-systematic approach to excavation strategy for this type of monument, it has not been possible adequately to correlate results from different sites. Despite these reservations, excavated evidence has demonstrated attributes common to several sites. The presence of coin flan moulds, for example, implies a possible administrative function. (See Toumaire *et al.* 1982, for distribution with more recent examples from Boxgrove,

Sussex (Rudling, forthcoming) and North Cerney, Glos. (Trow, 1988). Note also alternative interpretations of 'coin moulds' (Selwood 1980)). In addition most *oppida* exhibit a propensity for imported glass, ceramics and foodstuffs which quantitatively and/or qualitatively is at a level unequalled by surrounding non-nucleated settlements. The presence of such prestige items confirms the high status intimated by the dyke complexes around several of these sites, although it need not imply a redistributive function.

Those *oppida* surrounded by complex dyke systems were, no doubt, the focus of considerable social obligation but this need not have involved a large and permanently resident community. Unfortunately, the lack of large-scale sampling precludes any possible estimate of the density of population, although the non-systematic excavated sample currently available to us demonstrates considerable variation in the density and character of occupation within British *oppida*. At Camulodunum and Verulamium a combination of excavation, field survey and aerial photography has suggested that functionally discrete foci of settlement were scattered amongst farmland (Dunnett 1975, 15-27 and Saunders 1982) and it is apparent that farming activities played a major part in the role of these *oppida*. The juxtaposition of the Gorhambury enclosure and the Verulamium dyke system indicates a close connection between the industrial and agricultural aspects of this complex. Similarly, the palimpsest of enclosures and droveways in the area around the Gosbecks enclosure (Crummy 1977, fig. 13) denotes intensive involvement with animal management which, on the basis of animal bone evidence, was primarily cattle ranching (cf. Luff 1982).

Although as yet unsupported by excavated evidence, the configuration of the Camulodunum dyke system intimates that the Gosbecks enclosure may represent an early nucleus of occupation or the later formalization/veneration of such a nucleus (Hawkes 1982, 10-11). Development from an earlier, possibly defensive enclosure can be paralleled elsewhere. Excavations at Braughing-Puckeridge have provided a comparable picture of multiple-focus settlement over an area of some 100ha, with an early nucleus in and around an earthwork at Gatesbury (Partridge 1981). In addition to this impression of a rather dispersed settlement pattern, widely spaced sampling of the site has demonstrated that occupation was both transitory and migratory, with various 'foci' flourishing and declining independently (Partridge 1981 and 1982b; Potter and Trow 1988; Stead 1970).

In contrast, recent excavations below the Romano-British forum-

basilica at Silchester have revealed a highly organized settlement plan originating as early as the third quarter of the first century BC (Fulford 1986). Within the excavated area activity was apparently organized into *insulae* separated by roadways, although the more typical pattern of dispersed occupation foci is attested by intensive fieldwork on the periphery of the Silchester earthwork complex (Corney 1984). Whether the highly organized nature of the 'core' settlement is unique to Silchester, or whether its singularity reflects the lack of sampling of comparable areas within other 'oppida' is, as yet, unknown. Although large areas have been excavated within Verulamium and Colchester, the earliest deposits were ignored or sampled on a small scale. The large pre-conquest enclosure sealed by the Verulamium forum-basilica illustrates the point. Virtually nothing is known of its extent, internal organization or surrounding features (Frere 1957, 9-10).

From oppidum to urbs

The inadequacy of our understanding of major Iron Age settlements and, to a large extent, of the pre-Flavian phases of Romano-British towns, makes it difficult to assess adequately the extent of the native contribution to urban development and the processes by which only some of the major *oppida* evolved into Roman towns. Given the pre-existing trend towards nucleated and, in the case of Silchester, highly organized settlements, it seems probable that in the first decades after the conquest urban development on certain sites may have pursued a course that owed as much to native inspiration as to Roman innovation. That native-type 'oppida' should continue to develop or even originate in the immediate post-conquest period should occasion no surprise. Similar processes can be detected in Gaul at Mont Beuvray and Alesia where Romanized building types and materials are adopted although the settlement plan remains firmly Gallic in intent.

At Silchester, for example, it has been suggested that the construction of one of the dyke circuits originates during Cogidubnus' clientage (Boon 1969: although see Rigby and Freestone 1986). More intriguing is the relationship of the putative pre-conquest street 'system' to the later grid. Recently excavated evidence suggests that, at least in the central area, the orientation of the Romano-British *insulae* dates from AD 55/65, allowing over a decade for development on the Iron Age alignment to continue after the conquest (Fulford 1986). It is tempting to suggest that the NNE/SSW alignment of many of the Romano-British buildings, first noted by Aileen Fox (Boon 1974, 47), echoes pre-conquest or Claudio-Neronian boundaries and

property divisions surviving the later layout. Unfortunately, the present lack of evidence for early timber buildings within Silchester does not permit the suggestion to be pursued.

The *oppidum* at Bagendon provides an example of developing nucleated settlement in the Claudio-Neronian period unencumbered by direct military involvement or later Romano-British urban development although, as a 'failed' settlement, it cannot be held to be typical of its class. The generally accepted hypothesis for the relationship between Bagendon and Cirencester has been succinctly summarised by Wachter (1975, 30-32): the native *oppidum* originates early in the first century AD and during the Claudian period is policed by a cavalry fort some 5km to the south. By the 60's AD a civilian *vicus* was developing around the fort whilst at the native site activity was declining.

Recent research allows an alternative model for the relationship of both sites to be postulated. Vivienne Swan (1975) has suggested that the occupation levels excavated by Mrs Clifford during the 1950's were Claudio-Neronian in date rather than pre-conquest. Further small-scale excavation has supported this view and demonstrated that the limestone platform excavated by Mrs Clifford is in fact a road constructed in typically Roman fashion and leading through a gap in the linear earthwork system towards the interior of the site (Trow 1982b). The concentration of industrial activities along the principal route into the settlement is one which can be paralleled at other oppida (Collis 1979), for example at early Roman Mont Beuvray. Recent excavation at North Cerney, some 2km north of the Bagendon dyke complex has located a 4ha ditched enclosure which appears to originate rather earlier than the occupation at Bagendon and to be involved in a similar range of high-status activities including the manufacture of gold and silver coin flans (Trow 1988). In the Claudio-Neronian period the enclosure is levelled and during the first century AD a villa building erected. The proximity, contemporaneity and shared functions of the two sites suggests that both are related aspects of a single complex and that the North Cerney site represents the high status nucleus of that complex. The labour involved in the construction of the dykes implies that Bagendon/North Cerney was a focus for the large-scale exercise of social obligation.

Given the evolution of the North Cerney settlement into a Romano-British villa estate, it can be posited that, rather than a major centre of population, the Bagendon complex prior to the conquest represents an aristocratic estate exercising administrative functions. The economic catalyst of the conquest stimulates the initial development of a

nucleated settlement at Bagendon which continues to function, with Roman approval, as an administrative centre. The expanding settlement, devoid of direct Roman influence, develops to a 'native' pattern within a linear dyke system – to all intents and purposes an *oppidum*. Various aspects of the material evidence suggest that the Roman fort at Cirencester might be later in date than is generally accepted, perhaps originating in the Neronian period (Reece 1982; Rigby 1988b). This would account for marked differences in the coarse pottery repertoires of Bagendon and Cirencester (Trow 1988) and the contrasting ratios of native and Roman coins at the two sites (Reece 1979). The establishment of the fort and the development of *canabae* during the Neronian period would have diminished the significance of the Bagendon complex. With the withdrawal of the military c. AD 75 the topographically more suitable site at Cirencester was chosen as the administrative centre of the newly-established *civitas*, being integrated into the developing communications network (Burnham 1986, 193-4) and topographically suited to future expansion. Industrial activity at Bagendon declined rapidly and, with the early erection of a villa building on the site of the North Cerney enclosure, the site once more resumed its role as the centre of a rural estate.

The late development of the Bagendon complex relative to the *oppida* of the south and south-east, together with the eventual erection of a Romanized building at the putative early (?) focus of occupation within that complex provides interesting parallels with the occupation sequence currently being elucidated by excavation at Stanwick (Haselgrove and Turnbull 1983 Fig. 10). A similar pattern of development can be very tentatively proposed for the early villa establishments at Shakenoak and Ditchley, Oxon. which are situated within the poorly understood Grim's Ditch dyke complex. Perhaps significantly, all of these sites failed to develop directly into Romano-British urban centres of any significance.

From aedificium to villa estate

In the face of the greatly increased access to imported goods of the immediate post-conquest period it would have been important for those members, presumably the majority, of the British élite whose authority survived the transition to Roman rule to establish a new medium for conspicuous display. Ideally, this medium would stress not only the status of the individual but also underline his favourable relations with the occupying power. The obvious vehicle for such expression was architectural, particularly amongst a native élite who

had already assumed other Gallo-Roman pretensions. The visual impact of this imported style of building, must have been considerable. Although a rectilinear building tradition existed in the south and south-east (W. Rodwell 1978), over the greater part of pre-conquest Britain the dominant architectural type was the roundhouse (eg. Allen *et al.* 1984). The early employment of masonry building techniques, in particular, would have necessitated the involvement of continental craftsmen and would have provided a forceful demonstration of the owner's links to influential patrons (Slofstra 1983).

The pattern of development repeated for many British villa sites is the slow evolution of a 'native-type' farmstead over a century or more prior to the eventual construction of a Romanized dwelling. This gradual increase in material Romanization is generally interpreted as indicative of the steady accumulation of capital through surplus production. In contrast, an increasing number of sites, particularly in southern and eastern England, are now recognized as demonstrating a considerably more compressed development, with the appearance of fully Romanized structures within a generation or so of the conquest (Rodwell and Rodwell 1985, 41-5). The problems of archaeologically ascertaining the nature of villa ownership (Branigan 1982) means that it is uncertain whether the major investment of construction capital implicit in these early structures represents the realization of the considerable assets available to the British élite or the expenditure of foreign capital.

The rapidity with which luxurious Romanized structures began to appear on rural sites contrasts with their development in urban contexts. A public building programme was already underway in several towns during the reign of Nero and appears to have increased in pace and scope in the early Flavian period – a trend usually attributed to the positive intervention of Agricola (*Agricola* 21). Early monuments include the *fora* at Verulamium, Cirencester and Silchester and temples at Colchester, Chichester and Hayling Island. The inscription providing the only evidence for the Chichester temple (*RIB* 91) additionally demonstrates that major public buildings were being erected for the self-aggrandizement of the native aristocracy at an early date. Urban domestic housing, however, showed a far less precocious development (Walthew 1975). The degree of sophistication apparent in the construction and decoration of urban housing does not equal that employed for villa buildings until about the mid second century. Masonry-built domestic structures, for example, are particularly rare in towns before the mid second century even in areas

where there is an adequate supply of building stone, as at Cirencester. This retarded development is also apparent in the *coloniae* at Colchester and Gloucester where a more rapid development of Romanized housing might be expected. The contrast between rural and urban developments becomes more pointed because in several instances the early development of villas is closely associated with the growth of urban centres. Around Verulamium, for example, a 'cluster' of villas has been recognized, several of which originate in the pre-conquest period (Frere 1979).

That the construction of luxurious Romanized dwellings in the countryside should precede that in the newly-established towns should occasion no surprise if it is accepted that many or most of these structures were in native hands. A study of Iron Age coin distributions (Collis 1971) and recent cemetery evidence (Millett 1987a) supports the concept of a rurally-based élite and increasing evidence is becoming available that several early villas succeed pre-conquest sites of considerable status. Two recently excavated examples illustrate this point. At Rivenhall, Essex, a substantial masonry structure and a later villa, apparently of Gallo-Roman type, are built on the site of an affluent native farmstead (Rodwell and Rodwell 1985 – although see Millett 1987b). The North Cerney structure noted above (Trow 1988, Trow and James forthcoming) lies within an Iron Age enclosure producing 'coin-mould' fragments. Its elevated and rather exposed location is rather anomalous in terms of normal villa location and is difficult to reconcile other than in terms of direct continuity of ownership.

Together the evidence for high status native precursors for several early British villas and the primacy of prestigious rural domestic architecture over that in towns supports the notion that distribution of these early establishments – largely confined to south-eastern England with a few outliers possibly linked to *oppida*-type complexes – appears to represent the investment of native wealth previously directed towards the acquisition of prestigious Roman imports.

Discussion

Surveying the increasing quantity and quality of data presently available to the archaeologist it would appear that, in material terms at least, the 'Romanization' of southern Britain was achieved with considerable rapidity. It is possible to suggest that, in the early stages of this process of acculturation, three major episodes can be identified.

Firstly, and becoming increasingly understood, is the 'knock-on' effect of Caesar's annexation of the three Gauls. Internal strife within

the empire appears to have retarded certain aspects of the Romanization of Gaul (Drinkwater 1983, 19 and 27) and allowed the development of a Gallo-Roman culture with a vigorous native component. It was the activities and aspirations of this hybridized society which were mirrored in the changing mores of pre-conquest Britain. These influences were strongest in central-southern and south-eastern England and may have involved the semi-permanent presence of Roman or Gallic craftsmen and traders. Changes in eating and drinking habits are merely symptomatic of more deep-seated changes in British society in the south-east. Increased political centralisation and a trend towards nucleated settlement may also be attributed to developments in Gaul. Elsewhere in Britain radical differences in social organization may have retarded the pace at which Romanized tastes and manners were adopted.

The second major episode of innovation occurred, inevitably, in the immediate aftermath of the Claudian invasion. Prior to its annexation it seems likely that Britain comprised a market of secondary importance for Gallic and Mediterranean merchants with the main traffic in long-distance trade directed towards the Rhine garrison. Immediately after the conquest, the presence of a standing army in Britain and the availability of a largely unexploited market must have caused an influx of craftsmen, entrepreneurs and usurers to the newly-founded province, with far-reaching consequences for the balances within native society. For the lower echelons of the population conquest meant a (modest?) rise in tribute and a rapid increase in the availability of the type of luxury items previously rare outside south-eastern England and generally restricted to the aristocracy. Amongst a British élite whose wealth was largely based on herd and landholding, the sudden availability of credit and a new tier of patronage would inevitably have created tensions amongst the existing networks of social obligation. In tandem with these stresses the widening availability of those imports previously significant in the maintenance of the élite's prestige would have necessitated the adoption of new forms of display. It is suggested that the principal medium for this display was architectural and that the earliest developments were directed towards public structures in a limited number of urban centres and the aggrandizement of aristocratic *aedificia* by the construction of Romanized dwellings. That the distribution of early villa-buildings is generally restricted to those areas which were in receipt of the greatest quantities of imported luxury items in the pre-conquest period supports the suggestion that the villas are manifestations of the investment of native wealth. This early

development of a rural Romanized building tradition contrasts with the pattern in Gaul where the earliest developments appear to have been town-based (Drinkwater 1983, 190).

Existing native nucleated settlements continued to develop, although Roman military dispositions in or near these centres greatly influenced the exact pattern of their evolution both in terms of economic stimulus and surveying and building technique. Simultaneously, in those areas peripheral to the south-east where the development of nucleated settlements was retarded, the stimulus provided by Britain's annexation appears to have initiated the development of certain aristocratic estates into native-type *oppida*. In several cases, for example at Bagendon and Stanwick, these centres flourished briefly but failed to develop directly into major Romano-British centres.

A third major stimulus towards material Romanization appears to have been the movement of the army to more northern positions. Although this process was halted by the Boudican revolt, the failure of this rebellion to become more widespread suggests that many Britons already identified their interests with those of Rome. The fairly piecemeal movement of troops westwards and northwards was accompanied by the creation of self-governing *civitates* whilst the foundation of the *colonia* at Colchester provided a model of planned urban development not previously available. The Flavian period certainly witnessed considerable urban expansion with the creation of several towns and dramatic remodellings of existing developments at, for example, Silchester and Verulamium. This upsurge of development was presumably related to the newly-realized importance of the *civitas* capitals as administrative centres and reflects the involvement of the local élite in their own government. That the British aristocracy were engaged in *aemulatio*, with urban architecture wholeheartedly adopted as the vehicle for conspicuous displays of status, seems to be confirmed by Tacitus' observation that in the governor Agricola's attempts to promote *Romanitas*:

“competition for honour proved as effective as compulsion” –
(*Agricola* 21)

That these earliest efforts appear to have been directed towards urban public buildings and rural private dwellings provides an important insight into the disposition of the British aristocracy at this time. Despite their close involvement with the promotion of the growth of towns, the British élite were still largely resident on country estates and the predominant influence on the relationship of early villa and

town may well have been the distribution of *aedificium* and *oppidum* in the pre-conquest landscape.

Acknowledgements

The writer wishes to thank Ann Clark, Simon James, Martin Millett and Richard Reece for reading and commenting on an earlier draft of this paper. All views expressed remain, of course, the responsibility of the author.

Notes

- 1 Dionysius Periegetes *Orbis Descriptio* 562.

References

- Allen, D. 1967: Iron currency bars in Britain. *Proc. Prehist. Soc.* 11, 307-335.
- Allen, D. 1970: The coins of the Iceni. *Britannia* 1, 1-33.
- Allen, D. 1975: Cunobelin's Gold. *Britannia* 6, 1-19.
- Allen, D. and Haselgrove, C. 1979: The gold coinage of Verica. *Britannia* 10, 1-17.
- Allen, T., Miles, D. and Palmer, S. 1984: 'Iron age buildings in the Upper Thames region', in Cunliffe, B. and Miles, D. (eds.) *Aspects of the Iron Age in central southern Britain* (University of Oxford: Committee for Archaeology monograph 2), 89-101.
- Bayley, J. and Butcher, S. 1981: Variations in alloy composition of Roman brooches. *Proc. 1980 archaeometry conference, Paris, Revue d'Archaeometrie, supplément*, 24-36.
- Bedwin, O. and Orton, C. 1984: The excavation of the eastern terminal of the Devil's Ditch (Chichester Dykes), Boxgrove, West Sussex, 1982. *Sussex Archaeological Collections* 122, 63-74.
- Blagg, T.F.C. and King, A.C. (eds.) 1984: *Military and Civilian in Roman Britain: cultural relationships in a frontier province* (Oxford, Brit. Arch. Reps. 136).
- Boon, G.C. 1969: Belgic and Roman Silchester: the excavations of 1954-8 with an excursus on the early history of Calleva. *Archaeologia* 102, 1-82.
- Boon, G.C. 1974: *Silchester: The Roman town of Calleva*, Newton Abbot.
- Bradley, R. 1984: *The social foundations of prehistoric Britain* (London).
- Branigan, K. 1982: Celtic farm to Roman villa in Miles, D. (ed.) *The Romano-British Countryside* (Oxford, Brit. Arch. Reps. 103), 81-96.
- Burnham, B.C. 1986: The origins of Romano-British small towns. *Oxford Journal Archaeology* 5, 185-205.
- Burnham, B.C. and Johnson H.B. (eds.) 1979: *Invasion and response: the case of Roman Britain* (Oxford, Brit. Arch. Reps. 73)
- Clifford, E.M. 1961: *Bagendon: A Belgic oppidum. A record of the excavations 1954-56*, Cambridge.
- Collis, J.R. 1970: Excavations at Owslebury, Hants: A second interim report. In *Antiq. J.* 50, pt. 2, 246-262, Oxford.
- Collis, J. 1971: Functional and theoretical interpretations of British coinage. *World Archaeology* 3.1, 71-84.

- Collis, J. 1979: City and state in pre-Roman Britain. In B. Burnham and H. Johnson (eds.) 1979, 231-240.
- Corney, M. 1984: A field survey of the extra-mural region of Silchester. In M. Fulford 1984, *Silchester: excavations on the defences 1974-80* (London, Britannia Monograph Series 5), 239-297.
- Crowther, D. 1987: Redcliff, in *Current Archaeology* 104, 284-5.
- Crummy, P. 1977: Colchester, fortress and colonia. In *Britannia* 8, 65-107, London.
- Cunliffe, B. 1976: The origins of urbanization in Britain. In B.W. Cunliffe and T. Rowley (eds.) *Oppida: the beginnings of urbanization in barbarian Europe* (Brit. Archaeol. Repts. 11, Oxford), 135-161.
- Cunliffe, B.W. 1982: Iron Age settlements and pottery 650 BC – 60 AD. In M. Aston and I. Burrow (eds.) 1982, *The Archaeology of Somerset* (Bridgwater).
- Drinkwater, J.F. 1983: *Roman Gaul: the three provinces 58 BC-AD 260* (London).
- Dunnett, R. 1975: *The Trinovantes* (London.)
- Fitzpatrick, A. 1985 : The distribution of Dressel 1 amphorae in north-west Europe. *Oxford Journal of Archaeology* 4(3), 305-341.
- Frere, S.S. 1957: Excavations at Verulamium 1956. *Antiq. J.* 37, 1-15.
- Frere, S.S. 1979: Verulamium: urban development and the local region. In B.C. Burnham and H.B. Johnson 1979, 273-280.
- Frere, S.S. 1983: Roman Britain in 1982, in *Britannia* 14, 280-335.
- Fulford, M. 1984: Demonstrating Britannia's economic dependence in the first and second centuries. In T. Blagg and A. King (eds.) 1984, 129-142.
- Fulford, M. 1986: *Silchester excavation 1986* (privately circulated).
- Greep, S J. 1983: Early import of bone objects to south-east Britain. Note in *Britannia* 14, 259-261.
- Haselgrove, C.C. 1982: Wealth, prestige and power: the dynamics of late iron age political centralisation in south-east England. In C. Renfrew and S. Shennan (eds.), *Ranking, resource and exchange: aspects of the archaeology of early European Society* (Cambridge), 79-88.
- Haselgrove, C.C. 1984: 'Romanization' before the conquest: Gaulish precedents and British consequences. In Blagg and King 1984, 5-63.
- Haselgrove, C.C. and Turnbull, P. 1983: *Stanwick: excavation and research. Interim report 1981-3* (University of Durham Dept. Archaeology, Occ. Paper no. 4).
- Haselgrove, C.C. and Turnbull, P. 1984: *Stanwick: excavation and research. Interim report 1984.* (University of Durham Dept. Archaeology, Occ. Paper no. 5).
- Haselgrove, C.C. and Turnbull, P. 1987: *Stanwick: excavation and research. Third interim report 1985-6.* (University of Durham Dept. Archaeology, Occ. Paper no. 8).
- Hassall, M.W.C. 1979: The impact of Mediterranean urbanism on indigenous nucleated centres. In Burnham, B.C. and Johnson, H.B. *Invasion and response: The case of Roman Britain.* (Brit. Arch. Repts. 73), 241-235, Oxford.
- Hawkes, C.F.C. 1982: Colchester before the Romans or who were our Belgae?, *Essex Arch. and History*, 3-14.
- Hawkes, C.F.C. and Hull, M.R. 1947: *Camulodunum*. London.
- Hopkins, K. 1980: Taxes and trade in the Roman Empire. *J. Roman Studies* 70, 101-125.
- Jones, M.K. 1981: The development of crop husbandry. In M.K. Jones and G.W. Dingleby (eds.) *The environment of man: the Iron Age to the Anglo-Saxon period* (Oxford, Brit. Arch. Repts. 87), 95-127.
- Jones, M.K. 1982: Crop production in Roman Britain. In D. Miles (ed.) *The Romano-*

- British Countryside* (Oxford, Brit. Arch. Reps. 103) 97-107.
- Jones, M.K. and Miles, D. 1979: Celt and Roman in the Thames Valley: approaches to culture change. B. Burnham and H. Johnson (eds.) 1979, 315-325.
- King, A. 1984: Animal bones and the dietary identity of military and civilian groups in Roman Britain, Germany and Gaul. T.F.C. Blagg and A.C. King (eds.) 1984, 187-217.
- Leach, P. and Thew, N. 1985: A late Iron Age *oppidum* at Ilchester, Somerset. An interim assessment 1984. (Archive report).
- Luff, R.M. 1982: *A zooarchaeological study of the Roman north-western provinces*. (Brit. Arch. Reps. 137), Oxford.
- Middleton, P. 1979: 'Army supply in Roman Gaul: an hypothesis for Roman Britain' in Burnham and Johnson 1979, 81-97.
- Miles, D. 1982: *Romano-British countryside: Studies in rural settlement and economy*. (Brit Arch. Reps. 103), Oxford.
- Miles, D. (ed.) 1986: *Archaeology at Barton Court Farm, Abingdon, Oxon*. (Oxford Archaeological Unit Rep. 3: CBA Res. Rep. 50).
- Miles, D. and Palmer, S. n.d. (1982): *Figures in a landscape: archaeological investigations at Claydon Pike, Fairford/Lechlade, Gloucestershire. Interim report* (Oxford).
- Millett, M. 1980: Aspects of Romano-British pottery in west Sussex. *Sussex Archaeological Collections* 118, 57-68.
- Millett, M. 1984: 'Forts and the origins of towns: cause or effect?' in Blagg, T.F.C. and King, A.C. (eds.) *Military and Civilian in Roman Britain; cultural relationships in a frontier province* (Brit. Arch. Reps. 136), 65-74.
- Millett, M. 1987a: 'An early Roman burial tradition in central southern England' *Oxford Journal of Archaeology* 6(1), 63-8.
- Millett, M. 1987b: 'The question of continuity: Rivenhall reviewed'. In *Archaeological Journal* 144, 434-444.
- Nash, D. 1984: The basis of contact between Britain and Gaul in the late pre-Roman Iron Age. In S. Macready and H. Thompson 1984, 92-107.
- Niblett, R. 1985: *Sheepen: an early Roman industrial site at Camulodunum* (London, CBA Res. Rep. 57).
- Northover, P. 1987: Non-ferrous metallurgy in B. Cunliffe 1987 *Hengistbury Head, Dorset. Volume 1: The prehistoric and Roman settlement, 3500 BC - AD 500* (Oxford, Oxford University Committee for Archaeology Monograph no. 13), 186-96.
- Partridge, C. 1981: *Skeleton Green* (Britannia Monograph Series 2).
- Partridge, C. 1982a: Graffiti from Skeleton Green. Note in *Britannia* 13, 325-6.
- Partridge, C. 1982b: Braughing, Wickham Kennels 1982. *Herts. Archaeol.* 8, 1980-82, 40-59.
- Potter, T.W. and Jackson, R.P.J. forthcoming: *Excavations at Stonea Cambridgeshire, 1980-85*
- Potter, T.W. and Trow S.D. 1988: *Puckeridge-Braughing, Hertfordshire. The Ermine Street Excavations, 1971-72.* (= *Herts. Archaeol.* 10).
- Reece, R. 1979: Roman monetary impact. In B. Burnham and H. Johnson (eds.) 1979, 211-217.
- Reece, R. 1982: The Roman coins. In J. Wachter and A. McWhirr, *Early Roman occupation at Cirencester* (Cirencester, Cirencester Excavations I), 86-7.
- Rigby, V. 1978: The early Roman finewares. In A. Down *Chichester excavations 3* (Chichester), 190-204.
- Rigby, V. 1981: The Gallo-Belgic wares. In C. Partridge 1981, 159-195.

- Rigby, V. 1986: Gaulish fine-ware imports in I.M. Stead and V. Rigby 1986, *Baldock* (London, Britannia Monograph 7), 223-234.
- Rigby, V. 1988a: The Gallic imports in T.W. Potter and S.D. Trow 1988.
- Rigby, V. 1988b: The Gallo-Belgic wares in S.D. Trow 1988.
- Rigby, V. and Freestone, I. 1986: The petrology and typology of the earliest identified central Gaulish imports. *Journal of Roman pottery studies* 1, 6,21.
- Rodwell, K.A. 1979: Rome and the Trinovantes in B. Burnham and H. Johnson (eds.) 1979, 327-338.
- Rodwell, W.J 1978: 'Buildings and settlements in south-east Britain in the late Iron Age', in Cunliffe B. and Rowley, T. (eds.) *Lowland Iron Age communities in Europe* (Brit. Arch. Reps. Supp. Ser. 48), 25-41.
- Rodwell, W.J. and Rodwell, K.A. 1985: *Rivenhall: investigations of a villa, church, and village, 1950-1977* (Chelmsford Archaeological Trust Rep. 4: CBA Res. Rep. 55, London).
- Rudling, D.R. forthcoming: The excavation of a Romano-British settlement at Ounces Barn, Boxgrove, West Sussex. *Sussex Archaeological Collections*, forthcoming.
- Saunders, C. 1982: Some thoughts on the *oppida* at Wheathampstead and Verulamium. *Herts. Archaeol.* 8, 31-39.
- Selwood, D.G. 1980: The President's address. In *The Numismatic Chronicle* 140, i-vii.
- Slofstra, J. 1983: 'An anthropological approach to the study of romanization processes', in Brandt, R. and Slofstra, J. (eds.) *Roman and Native in the Low Countries* (Brit. Arch. Reps. Supp. Ser. 184), 71-104.
- Sparey Green, C. 1986: Earthworks of prehistoric or early Roman date in the Dorchester area. *Proc. Dorset Nat. Hist. and Arch. Soc.* 108, 193-4.
- Stead, I.M. 1970: A trial excavation at Braughing, *Herts. Archaeol.* 2, 37-47.
- Swan, V. 1975: Oare reconsidered and the origins of Savemake ware in Wiltshire. *Britannia* 6, 37-61.
- Toumaire, J., Buchsenschutz, O., Henderson, J. and Collis, J. 1982: Iron age coin moulds from France, *Proc. Prehist. Soc.* 48, 417-35.
- Trow, S.D. 1982a: An early intaglio found near Cirencester, Gloucestershire. Note in *Britannia* 13, 322-323.
- Trow, S.D. 1982b: Recent work at Bagendon - a brief interim report. In *Glevensis* 16, 26-9.
- Trow S.D. 1988: Excavations at Ditches hillfort, North Cerney, Gloucestershire, 1982-1983. In *Trans. Bristol and Glos. Arch. Soc.* 106, 19-85.
- Trow, S.D. and James, S. forthcoming: Excavations of a late Iron Age enclosure and Romano-British Building at North Cerney, Gloucestershire, 1984 to 1985.
- Wacher, J. 1975: *The towns of Roman Britain* (London).
- Walthew, C.V. 1975: 'The town house and the villa house in Roman Britain'. *Britannia* 6, 189-205.
- Whimster, R. 1981: *Burial practices in Iron Age Britain* (Brit. Archaeol. Rep. 90, Oxford).
- Williams, D.F. 1981: The Roman amphora trade with late Iron Age Britain. In Howard, H. and Morris, E. L. (eds) *Production and Distribution: a ceramic viewpoint* (Oxford, Brit. Archaeol. Rep. Int. Ser. 120), 123-32.

Section III

Urban Development – Hispania

The city and city-life was one essential component of Roman life, and thus of Romanization in the Provinces. Urbanization is a common factor in the three papers which discuss the Spanish Provinces. Both Keay and Edmondson, on the provinces of Hispania Citerior and Lusitania respectively, are concerned with areas which, though contrasting geographically, both have forms of proto-urban hillfort settlement, and were penetrated to some extent by Mediterranean ideas through Greek and Punic trade and coastal colonization before the Roman conquest. Keay makes the point that the conquest of Hispania from 218 BC onwards began before Rome had evolved an administrative framework for provincial government. The Romans' response to Spain was thus very influential on their administrative approach in other provinces. In Spain, initially, their preoccupation was with the Carthaginians rather than with the Iberians, hence the early fortification of Tarraco as a military base. Keay argues that Roman urbanization and administrative organization were secondary developments, a by-product of economic growth. The imposition of taxes was followed by the development of native coinages, the creation of a market for imported Italian goods, and the growth of local wine production. This market economy stimulated the growth of such new Iberian towns as Gerunda in the early first century BC. Roman-style urbanization followed, under Caesar and Augustus, with the foundation of colonies at Emporion, Tarraco and Barcino, and the reorganization of the coinage on Roman models.

Edmondson develops the point that a prerequisite for urbanization was a prosperous agricultural hinterland, and shows how the physical differences in the three *conventus* of Lusitania led to regional imbalances in cultural development. As a corrective to Strabo's characterization of the whole area as uncivilized, he cites archaeological evidence for Greek acculturation of the *castros*,

religious sanctuaries and buildings layout. Archaeology also shows a diversity of responses in the degree to which hillforts developed into fully Romanized towns. He regards these as depending essentially on the native élites rather than on Roman imposition, and concludes with a more detailed comparison of the colony of Augusta Emerita, consciously imitating Rome itself, and the Celtic community of Conimbriga, responding architecturally to its acquisition of Roman status.

The creation of the towns, their provision with buildings and amenities of Roman type, depended essentially on private munificence. The acts of individual benefactors are recorded on inscriptions (in which Spain is notably richer than the provinces to the north). Mackie's examination of this material provides insight into some of the personal motivations and decisions which contributed to the wider patterns of activity and response studied in the previous two papers. She considers the objects of that munificence, and the reasons for recording it epigraphically. The reward, for the individual benefactor, was public esteem; *honor*. The concept probably accompanied the adoption of the Latin in which it was expressed. Mackie explains that the effectiveness of *honor* depended institutionally on the formal existence of the local councils with legal powers to respond to munificence (by voting statues, administering endowments etc.). The 'constructive collaboration' between benefactors and local governmental organizations was a significant factor in the Roman Empire's long survival.

10. Processes in the Development of the Coastal Communities of Hispania Citerior in the Republican Period

by Simon Keay

Introduction

Discussions about Romanization in the Western Empire tend to draw upon historical and archaeological evidence from the provinces of Gaul, the Germanies, Britain and Africa. They focus upon issues pertinent to the character of each area and the ‘models’ are then applied to areas about which we know rather less. For the Iberian peninsula, this is very unsatisfactory. The Spanish provinces of Citerior and Ulterior were amongst Rome’s earliest territorial acquisitions. They were created before Rome had evolved any specific administrative frame-work for its provinces and, thus, provide us with an almost unique opportunity to study the processes of social change which contributed to the emergence of the Augustan provinces of Tarraconensis and Baetica. In areas like Iberia, Rome reacted to local conditions and evolved an administrative framework which was later applied to newly conquered areas. It follows that the Iberian evidence is vital to a clear understanding of Romanization of later western provinces.

During the later third and second centuries BC, the main areas of sustained contact between the Romans and indigenous peoples of Iberia were southern Spain, the east coast and the lower Ebro valley. In this paper, attention is focused on the coast between the Pyrenees and the Ebro valley ([Fig. 10.1](#)). Its aim is to study the long-term impact of the Roman conquest and subsequent processes of change amongst the coastal communities of eastern Spain between 218 BC and the very end of the first century BC. Five basic themes will be pursued:

1. That there was no ready-made provincial framework or policy of administration applied to this part of Citerior by the Romans. That

which did emerge, however, was a response to local conditions.

2. The effect of a regular system of taxation in stimulating sufficient agricultural surplus amongst the Iberian communities to generate marketable goods.

3. The role of commercialized exchange in breaking-down the Iberian settlement pattern.

4. The importance of events and decisions outside north-eastern Iberia influencing the siting and movement of high-status towns within the Iberian settlement pattern.

5. The decline of the larger Iberian hillforts as centres of prestige, in favour of the development of a hierarchy of high-status Roman towns underscored by social rivalry and expressed in terms of extravagant building programmes.

The character of Iberian settlement along the east coast of Iberia prior to the Roman Conquest

The north-eastern coast of Iberia (Fig. 10.2) has enjoyed a long tradition of contact with the neighbouring cultures of western Europe,¹ and the Mediterranean.² This entered a new era around 600 BC, when colonies were founded at Emporion (Empúries) and Rhode (Roses). The former was ideally situated at the headwaters of the Ter and Fluvià, important rivers which provided access through the fertile soils of the Empordà into the Serrelada Transversal at the foothills of the Pyrenees. The colonists, thus, were in a position to tap their immediate agricultural hinterland and relatively close to sources of iron, silver and copper.³ Rhode was not quite so well-placed, but offered a far more sheltered harbour. After a period from the sixth to later fifth centuries BC, during which their role was restricted to the vicinity of the Empordà, Emporion began to assume a very influential role as a 'port of trade'.⁴ Its primary zone of influence was the coastal area between the modern French province of Languedoc in the north, and the Garraf mountains on the south side of the river Llobregat. Settlement at Emporion had spread from a small offshore island (modern Sant Martí d'Empúries) to a sizeable mainland port (the 'Neapolis'), planned in the Greek way, which was distinct from the surrounding Iberian communities. Excavations have revealed a wide variety of imported goods at Emporion, including Attic Black- and Red-Figure pottery, together with pre-Campanian Black-Glaze, Massiliote amphorae, Punic pottery and amphorae. Items such as these were used in exchange transactions with middlemen from Iberian communities.

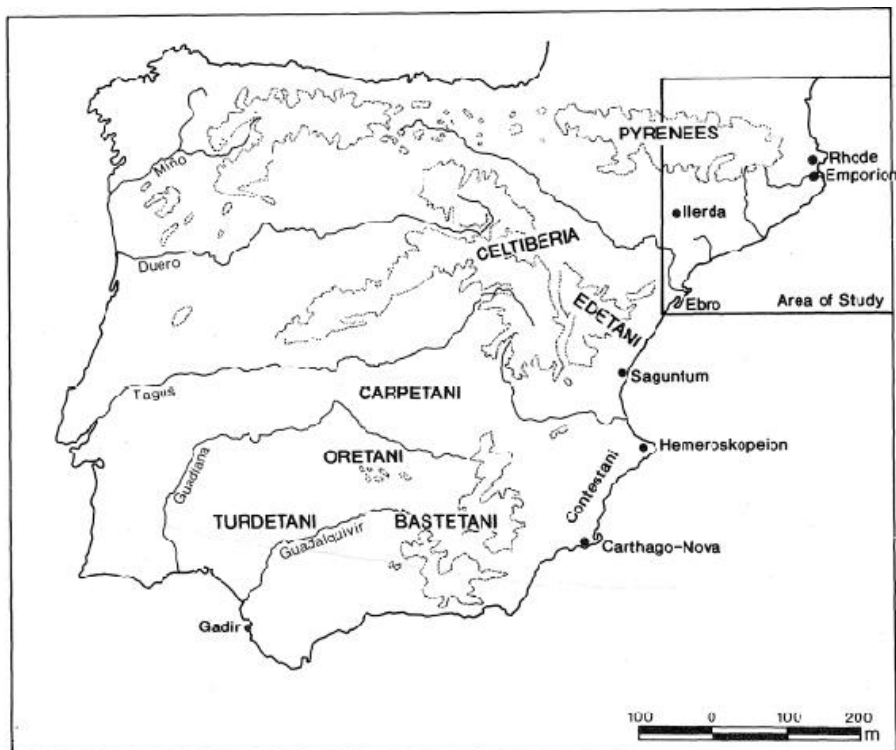


Fig. 10.1. Map of Iberia showing the location of the area discussed in this paper.

The exceptional character of Emporion was further defined by the issue of a series of small silver coins between the later fifth and the first half of the third centuries BC,⁵ which was then replaced by a larger coin – the silver drachma, which bore the name of the colony and which was probably issued down to as late as the second century BC.⁶ This silver coinage never seems to have been used primarily as a medium of exchange. Rhodé issued a bronze coinage, and fractions, which were copied by some local communities.

Between the sixth and early fifth centuries BC, the coastal area between the Garraf mountains and the Ebro fell outside Emporion's zone of primary influence. Communities in this zone were influenced by Phoenician traders exploring the lower Ebro valley.⁷ The only other focus of Greek influence lay at Hemeroskopeion (Denia), a long way to the south.⁸ It was only with the expansion of the influence of Emporion and Hemeroskopeion and the foundation of further Massiliote colonies after the beginning of the fifth century BC, that Greek influence began to prevail upon the area between the Garraf and the Ebro.

The evidence suggests, therefore, that in the area of study,

Emporion and Rhode were the main foci for Greek cultural influence from the earlier fifth century BC onwards. There is little evidence for any sustained Italian influence prior to the Roman invasion of 218 BC.

The Iberian peoples of the east coast were strongly influenced by the Greek colonies. The later classical sources inform us about their disposition at about the time of the Roman conquest.⁹ The Indiketes were to be found in the vicinity of the colonies while immediately to the south-west lay the Ausetani. In the foothills of the Pyrenees, to the north, were the Cerretani, Bergistani and Lacetani. The Laietani were a coastal people occupying most of the modern province of Barcelona, whilst to the south of the Garraf lay the Cessetani. The Ilercaones encompassed the mouth of the Ebro and the northern part of the modern province of Castelló de la Plana.¹⁰ Broadly speaking, these were coastal peoples shut-off from the hinterland by the peaks of the inner coastal mountain chain, and whose near neighbours to the west were the Ilergetes.

Research in recent years has revealed the existence of a large number of Iberian settlements in this area. The absence of any coordinated research, or survey, precludes discussion of settlement hierarchies or settlement densities. For the purpose of this paper, however, a distinction can be made between larger and rarer 'central-place' settlements and sites of lesser importance. Amongst the Indiketes, examples of the former can be found the great hill-fort of Puig de Sant Andreu (Ullastret) (Fig. 10.3) and Puig Castellar (Pontós).¹⁰ Puig del Castell (Sant Julià de Ràmis) and Mas Castell (Porqueres) lay in the territory of the Ausetani, while Burriac (Cabrera de Mar), Turó d'en Boscà (Badalona), Turó del Vent (Llinas del Vallès) and Puig Castellar (Santa Coloma de Gramenet) were in the territory of the Laietani. Amongst the Cessetani, one might cite Olèrdola (Vilafranca del Penedès), a large Iberian settlement beneath the lower town of Tarragona, the site of El Vilar (Valls) and Santa Ana de Castellvell. The Castellet de Banyoles (Tivissa) overlooked the Ebro in the territory of the Ilercaones. These settlements developed in tandem with the growing influence of the Greek colonies, between the fifth and fourth centuries BC. For the most part, they were situated on defensible promontories, controlling access to good agricultural land, river systems and, ultimately, the coast.

The layout of these settlements was characterized by intensively occupied areas enclosed within monumental stone walls, which often reflected the influence of Greek planning techniques. Houses were simple with no internal decoration or architectural pretensions and were flanked by regularly planned streets. There is no evidence for

any public buildings, although small temples have been discovered within the walls of the Puig de Sant Andreu and Burriac.¹¹ These sites were, thus, important population centres exercising a degree of control over their surrounding territory. They were also centres of craft specialization and exchange. Excavations have uncovered ample evidence for textile manufacture,¹² while one must assume that much of the metalwork and painted pottery that is so common at these sites was either manufactured at dependant sites close by,¹³ or within their walls. There is also evidence that sites like Puig Castellar de Pontós, Puig de Sant Andreu, Mas Castell and Burriac stored large quantities of grain and other foodstuffs produced in the territory under their control.

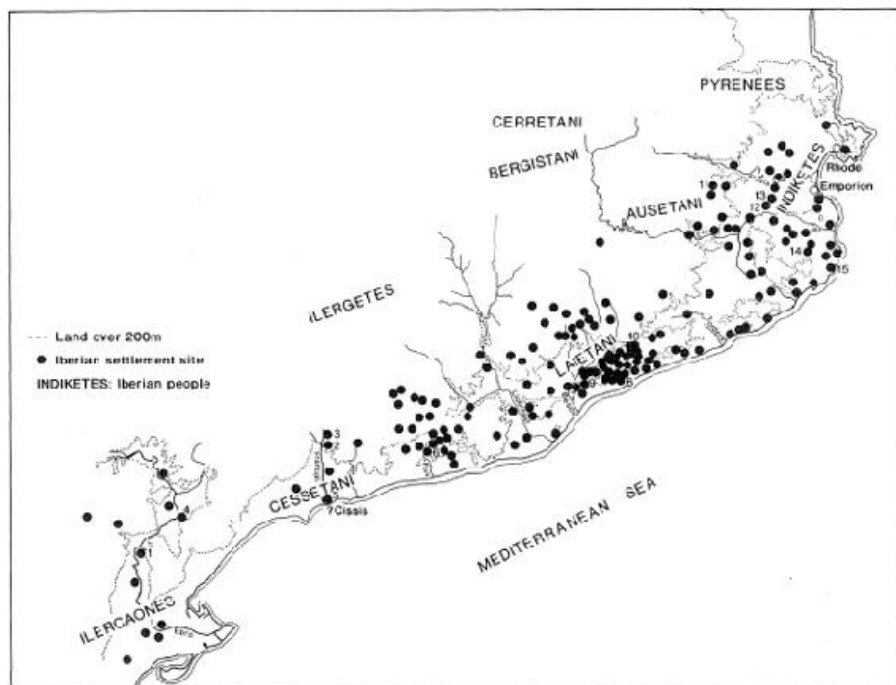


Fig. 10.2. Map showing the distribution of sites in north-eastern Spain prior to the Roman conquest of 218 BC (based upon published sites and compiled largely before 1983).

Numbers refer to sites mentioned in the text: 1. Santa Ana de Castellvell 2. El Vilar 3. Fontscaldes 4. Castellet de Banyoles 5. Tarragona 6. Olèrdola 7. Puig Castellar 8. Burriac 9. Turó d'en Boscà 10. Turó del Vent 11. Mas Castell (Porqueres) 12. Puig del Castell (Sant Julia de Ràmis) 13. Puig Castellar (Pontós) 14. Puig de Sant Andreu (Ullastret) 15. Castell de la Fosca (Palamós).

The sites of lesser importance are far more common and are found in uplands and lowlands throughout the area under study. One area of great density is to be found in the uplands of Laietanian territory,

especially in the hinterland of the larger settlements of Burriac and Mas d'en Boscà. These vary from smaller versions of the larger settlement sites – like, for instance, Castell de la Fosca (Palamós: Fig. 10.4) – to the scatters of Iberian pottery which litter the lowlands in areas of the Tarragonès and Penedès. Recent excavations at one of these small farm sites¹⁴ uncovered storage pits for grain, suggesting that the site was used for storage by farmers prior to the removal of the grain to the neighbouring major settlements at Alorda Park, or Aderró. In a similar way, the well-known Iberian fine-ware and amphora production site of Fontscaldes (Valls), in the hinterland of Tarragona, may have supplied the larger settlement at El Vilar (Valls).

There are, as yet, too many gaps in our knowledge for us to understand the many complex social, political and economic relationships between these sites and their role within the territories of the different peoples. Nevertheless, the available evidence allows us to construct a working model with which investigation can begin. First of all, one must assume the existence of an élite central authority based at the larger settlements.¹⁵ The existence of monumental defensive walls points to a supply of centrally organized labour. That the central authority was probably an aristocratic élite is suggested by the high concentration of prestigious imported ceramics, foodstuffs, bronze and iron weapons, tools, jewellery and occasional gold and silver work found at the larger settlements. Indeed, this tallies with information provided by Livy, who records the names of local leaders, like Amusicus leader of the Ausetani.¹⁶ The larger well-defended settlements allowed the élites to dominate the better, low-lying, agricultural land and metal sources within recognized territories.

The basis of control was the élite of the larger settlements monopolizing regional exchange networks, and ensuring the virtual exclusivity of foreign imports and their re-distribution. In return for imports, the larger settlements supplied grain, other cereals, vegetables, fruits, metals and ceramics to Emporion.¹⁷ The mechanism by which larger settlements ensured the continued flow of these goods from their territories is not known, although some form of tributary relationship with the lesser settlements probably existed. On a wider canvass, it is doubtful whether a single centralized authority exercised sustained control over the peoples of the north-east. The classical sources make it clear that only exceptionally, as in the rebellion of 197-195 BC (infra) did the tribes of the north-east draw together, and then it was to confront a common enemy.

In conclusion, then, the working model for Iberian settlement in the north east could be summarized in the following way. Evidence for

Iberian élites and settlement hierarchies underpinned by status and prestige, being:

1. The situation, size and degree of sophisticated planning of settlements;

2. A regular, monopoly, of imports.

However, the whole edifice relied upon a limited supply of imports directly to larger, high status settlements whilst the loyalty of lesser settlements was ensured by the monopoly and re-distribution of these and the force of arms. Such suzerainty was perhaps expressed in the form of tribute paid in agricultural goods and primary resources exacted from the lesser settlements.

The Roman Conquest and consolidation of the Roman presence in north-eastern Spain

The Roman conquest in this part of Iberia was brief and, rather than a blow-by-blow account of military campaigns, its immediate effects are our concern here. It should be stated at the outset that the presence of the Romans in Iberia was not simply aggressive Roman expansionism, rather a measured response to Carthaginian expansion in Iberia. The conquest should be understood in the context of Roman strategy in the Second Punic War.¹⁸

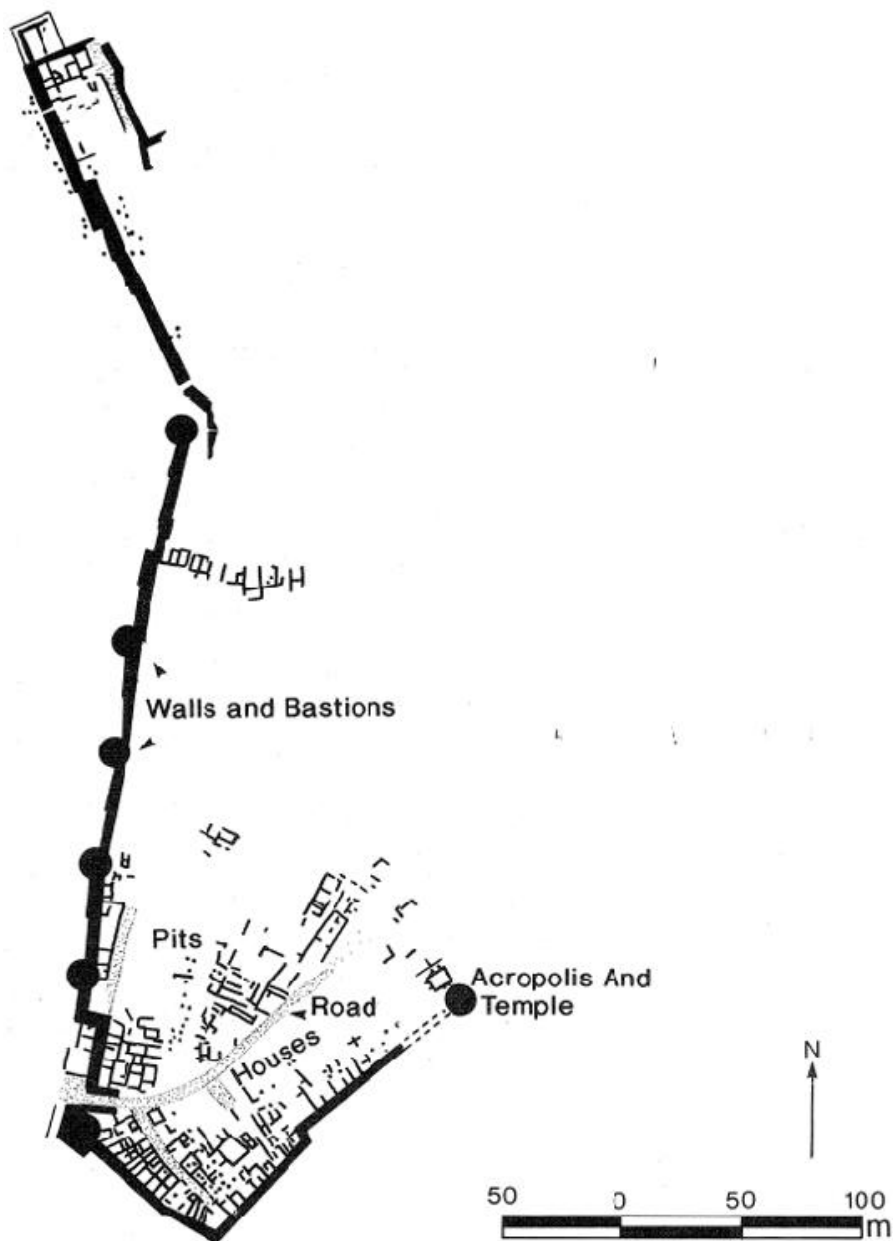


Fig. 10.3. A major Iberian settlement. The hilltop site at the Puig de Sant Andreu (Ullastret, Girona)

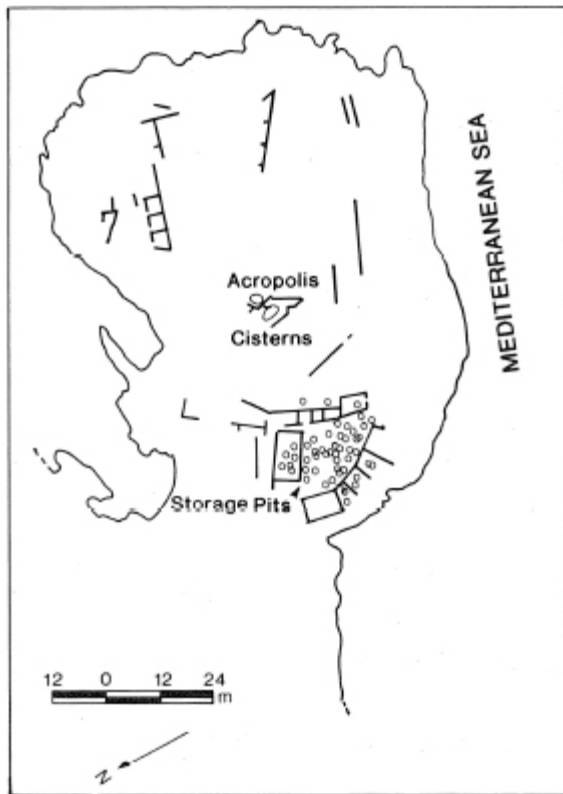


Fig. 10.4. Castell de la Fosca (Palamós, Girona). An example of a lesser Iberian settlement, situated on an offshore peninsula

The initial conquest of the north-east was the work of Cnaeus Cornelius Scipio in 218-217 BC at the head of two legions, Roman citizen cavalry, 14,000 allied infantry and 1,600 allied cavalry. After using diplomacy to build Roman influence in the area, Scipio defeated the Carthaginian general Hasdrubal in a battle near Cissis, which may perhaps be identified with the Iberian settlement at Tarragona.¹⁹ Hasdrubal attempted a counter-attack against Roman troops in the vicinity of Cissis, after which Scipio established an important military base called Tarraco in its immediate vicinity. Shortly afterwards, Scipio attacked and defeated the Ausetani and Laietani, killing some 12,000 of the latter. There were further struggles between the Romans (led by Fonteius and Marcius) and Carthaginians to the north of the Ebro, following the catastrophic defeat of Cnaeus and Publius Scipio in southern Spain during 212 BC.²⁰ In the initial conquest of the north-east, therefore, the Romans blatantly pursued their own strategic interests at the expense of traditional Iberian social networks.

The historical evidence makes it clear that after the Romans had driven the Carthaginians out of the peninsula in 206 BC, the Iberians realized that they intended to retain their military presence and broke into open revolt in 206 and 205 BC.²¹ The Roman decision to stay in Iberia was probably coloured by the continued war against Hannibal in Italy, and the determination that this strategically vital area should not fall back into Carthaginian hands.²² The revolts were instigated by the Ilergetes, and rapidly drew in the Lacetani and Ausetani, but were soon put down. In 197 BC, a revolt broke out against the Romans in southern Spain, rapidly spreading to the peoples of the north-east and becoming serious enough to merit the intervention of M. Porcius Cato as supreme commander in Spain. Cato was involved in battles against the Indiketes, the Bergistani and the Lacetani. Furthermore, he demolished their wall-circuits and disarmed all communities north of the Ebro.²³ The rebellion was finally quelled by 195 BC.

Between 218 and 195 BC, therefore, the Iberian communities of the north-east came firmly under the military control of the Romans in Spain. Indeed, in 197 BC, Roman possessions in Iberia had been formalized into two separate commands, or *provinciae*, each under the command of a praetor specially elected at Rome each year. The northern province, Hispania Citerior, consisted of the coastal strip from the Pyrenees to the south side of the modern province of Murcia.²⁴ There is no firm evidence as to which, if any, single centre was chosen as the capital of Citerior at this early date, although modern scholars usually assume that it was either Tarraco or Carthago-Nova (Cartagena).

The effect of these 23 tumultuous years was to generate social stresses on an unparalleled scale and to upset the traditional relationships between Iberian communities. In the first instance, as Cnaeus Cornelius Scipio selected Cissis-Tarraco (Tarragona) as his military bridgehead, this settlement gained great regional importance. In 211, for instance, it played host to representatives and delegations from the Iberian peoples allied to Rome who were attending upon Scipio Africanus.²⁵ The archaeological evidence, of course, is reflected principally in the abandonment of major settlements between the later third and early second centuries BC. Amongst the Indiketes, for example, the greater part of the Puig de Sant Andreu was abandoned, as were the Castellet de Banyoles (Tivissa) and El Vilar (Valls) amongst the Ilercaones and Cessetani.²⁶

Archaeology is also starting to reveal some of the military measures taken by Rome to ensure the stability of the area this time. In the

territory of the Indiketes, a garrison-building has been identified on the large hill immediately behind the Greek port of Emporion. its salient features consist of a cyclopean stone wall enclosing a rectangular area, and several large water cisterns.²⁷ Moreover a monumental Roman wall, running southwards from the town, was built at the same time.²⁸ These structures are best understood in the context of an attempt by Rome to ensure the security of her faithful ally after the rebellion of 197-195. Emporion at this stage was still vital to Rome as a staging post for supplies coming along the southern Gaulish coast from Italy, en route to Tarraco and Carthago-Nova. The measures taken to ensure the security of Scipio's bridge-head at Tarraco were even more impressive. The great limestone hill overlooking the Iberian settlement of Cissis was seized by the Romans and fortified with at least two stretches of monumental defensive wall and three adjoining towers.²⁹ These defences were on a huge scale and underlined the great strategic importance of Tarraco to the Romans (Fig. 10.5). It was the most convenient point along the coast for the disembarkation of men and supplies from Italy. During the Second Punic War, it was the ideal springboard for strikes against Carthaginian forces south of the Ebro, while for the greater part of the second century BC, its proximity to the Ebro meant that it was the ideal depot for Roman forces campaigning in Celtiberia.

Early to Late second century BC

The development of Tarraco

The most important regional development in the north-east, took place in the territory of the Cessetani, as a result of the military considerations discussed above. At Tarraco, towards the middle of the second century BC, the defensive walls of the garrison were extended to run at least 1400 metres around three sides of the hill,³⁰ and then extended to the south-west to enclose the Iberian settlement below (Fig. 10.5). It was probably provided with towers at 50 metre intervals. It is unlikely that this represents a truly urban development, marking the emergence of a Hispano-Roman town. Recent excavations within the Iberian settlement have shown that Roman-style building techniques (mortar-joined walls with stucco decoration) did not appear until the last quarter of the second century BC.³¹ However, it is important to see the enlargement of the walled area in the context of Tarraco's military role as springboard for armies involved in the Celtiberian Wars of the 150's-130's BC. In 180-178 BC, for example, Tarraco is clearly mentioned as the place where Tiberius Sempronius

Gracchus reorganized his army.³² At the outbreak of the Celtiberian War in 153, Appian tells us that Nobilior marched (from Tarraco) against Segeda with an army of nearly 30,000 men.³³ A good many of these could have been bivouacked within Tarraco's newly enlarged enclosure prior to the campaign.

A corollary of the presence of large numbers of Roman and Italian troops at Tarraco over the years, is the development of a steady supply of Italian imports. Excavations in different parts of the town have revealed large quantities of Greco-Italic and Dressel 1A wine amphorae, a wide variety of Black Glaze A wares and a selection of central Italian coarse wares. Comparable goods were not available locally and the imports were probably destined, in the first instance, for the soldiers and resident officials at Tarraco. These people were probably present in some strength and may have been sufficiently influential to form a *Conventus Civium Romanorum*.³⁴ In the absence of any municipal authority, this body may have played an important role in the running of the community.³⁵

The mid-second century BC, therefore, saw Tarraco developing as an exceptional centre for the amassing and re-distribution of foreign imports. There is also evidence that by the later second century BC Tarraco had become the focus of an important road network, which linked it to the lower Ebro valley, the Vallès, the Maresme and such settlements as Auso (Vic). However there is no evidence that it had yet assumed any of the formal juridical or architectural characteristics of a Roman town. The same is true for Emporion, even though it appears that the Greek port underwent some important urban reconstruction around 175 BC.³⁶

The beginnings of taxation

As far as this paper is concerned, the importance of centres like Tarraco and Emporion is their role as depots for the re-distribution of Italian wine, fine ceramics and other prestigious goods to Iberian settlements of all classes. Before attempting to establish the effect that these imports were to have on the Iberian settlement hierarchy, one has to understand the mechanism which enabled the Iberians to purchase them. If one accepts that there was no single centralized authority in the north-east prior to 218 BC on the one hand, and the importance of taxation in stimulating the generation of a surplus sufficiently large for the purchase of luxuries on the other,³⁷ then the date of the introduction of regular taxation in Hispania Citerior is of critical importance.

Many scholars believe that the regular collection of a fixed tax

(*stipendium*) payable in silver coins issued by Iberian stipendiary communities, and a 5% corn levy (*vicensima*) commutable to payment in Iberian coinage, may have begun in 197 BC.³⁸ However, Richardson³⁹ has argued that prior to 179/178 BC at the earliest, ad-hoc levies were the only demands made upon Iberian communities and that the *stipendium* was merely a cash payment for the upkeep of the Roman legions in Iberia. Indeed, this was paid in bronze coinage which was usually brought across from Rome itself.⁴⁰ Grain was collected locally by army commanders when the need arose. Indeed the only regular tax prior to 179/178 was instituted by Cato, who “organized the collection of large revenues from the iron and silver mines” north of the Ebro in 195 BC.⁴¹ Richardson argues convincingly that the institution of the *stipendium* and *vicensima* in Citerior was the work of the governor T.Sempronius Gracchus in 179/178.⁴² Henceforth, the collection of grain from subject communities was regularized at 1/20th of the crop, whilst the *stipendium* became a fixed payment.

These arrangements seem to have coincided with the appearance of silver and bronze coinage issued by various communities in Citerior.⁴³ The first silver issues were minted at KESE (probably to be identified with the Iberian settlement at Cissis-Tarraco), at AUSEKESKEN (in the territory of the Ausetani), at ILTIRTA (amongst the Ilergetes), and amongst subject communities in Celtiberia.⁴⁴ The coins were minted at Roman behest at a time when Roman regular coinage effectively did not arrive in Iberia. They were on a similar weight standard to Roman denarii and most bore the standard iconography of a male head on the obverse and a horseman on the reverse.

There exists, therefore, a strong possibility that some of the goods and commodities raised from the Iberian communities was converted into this coinage, which was then used to pay for the maintenance (*stipendium*) of Roman troops in the Celtiberian and later wars in Iberia. Towards the middle of the second century, therefore, Tarraco and possibly Auso (Vic) stand out as major centres for the collection of goods received in taxation and their conversion into coinage. During the later second and earlier first centuries BC, the use of coinage in this way spread to communities throughout the north-east. Amongst the Laietani, bronze coinage was issued at ILTURO,⁴⁵ and later at LAIESKEN,⁴⁶ LAURO,⁴⁷ and BAITOLO;⁴⁸ UNTIKESSEN⁴⁹ was the only issuing authority amongst the Indiketes; EUSTIBAIKULA⁵⁰ was probably situated in the territory of the Ausetani. Most of these mints persisted until some time during the first century BC, issuing coinage with a predominately local currency.⁵¹

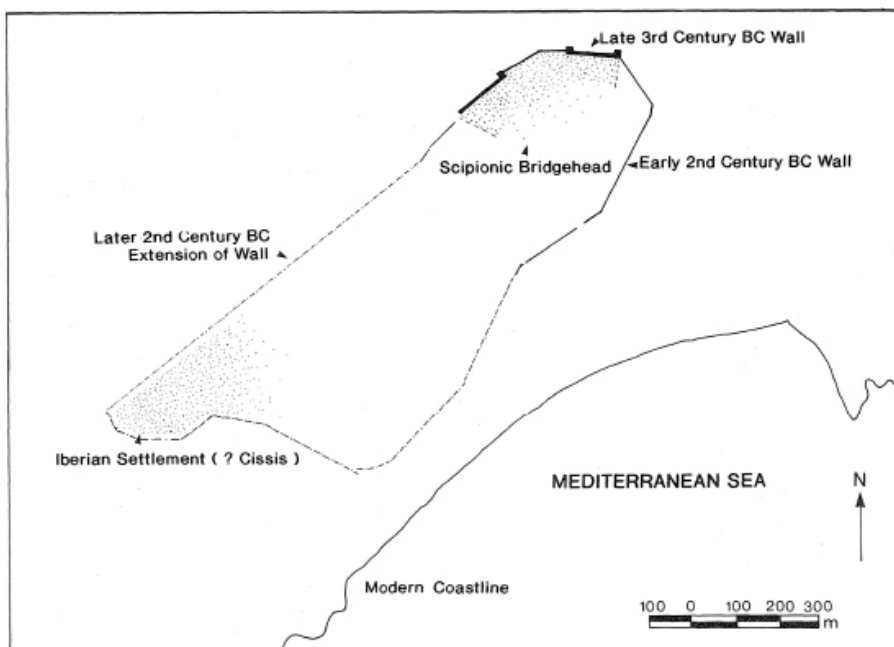


Fig. 10.5. Tarraco (Tarragona) between the late third and late second centuries BC.

It can be argued, therefore, that it was only from some time towards the middle of the second century BC that taxation was regular enough to stimulate an agricultural surplus amongst the communities of Hispania Citerior that was large enough to allow them to sustain a regular silver and bronze coinage and pay for imported luxuries. It would follow that one could only talk in terms of a viable and growing market for Italian merchants from around the middle of the second century BC. The size and quality of the market would have depended, in the first instance, upon the level of taxation imposed by Rome. Iberian complaints of extortion against the governors of Citerior for 176 and 174 were made to the Roman Senate in 171 BC,⁵² suggesting that this was high. The quality of the market, no doubt, would have improved as the Iberian small change paid out to soldiers was spent in the areas where they were stationed. In this way, coinage trickled away from centres like Tarraco and Emporion into the Iberian communities, leading to a gradual monetization of the north-east during the later second and first centuries BC.

The Impact of the Changes

This thesis is supported by the sharp increase in the quantity of Italian ceramic imports (especially Dressel 1A wine amphorae) at all classes of Iberian settlement, from the middle of the second century BC

onwards. Nowhere is this clearer than on sites in the Ager Tarraconensis. Survey work is revealing large quantities of imports on lowland sites of small-middling size (probably to be identified as farms) which were either newly founded or yielded traces of earlier occupation. By contrast, imports are absent from the hill-top sites characteristic of the pre-Roman period, which were gradually abandoned. This suggests that towards the middle of the second century BC, Iberian farmers began to participate in local and regional exchange with the Romans for goods imported to Tarraco from overseas. Moreover it suggests that there was a growing intensification in farming, as farmers produced cash crops in an attempt to meet the burdens of taxation and rents.⁵³

Other work suggests that these processes soon gave rise to the appearance of small, solidly built, Roman farms. At the site of El Moro (Torredembarra), towards the eastern edge of the Ager Tarraconensis, excavations have uncovered two rooms of a villa with mosaic tesserae decorating pink mortar floors, and evidence of a colonnade. This dated to between the later second and early first century BC.⁵⁴ At the site of L'Argilera, to the north-east,⁵⁵ the evidence is even more explicit. A small and unsophisticated Roman farm was built at about the same time, coinciding with the abandonment of the important Iberian hill-top settlement of Alorda Park close-by.⁵⁶

The strategic and administrative role played by Emporion was considerably less than that enjoyed by Tarraco. However, it was still an important centre of Roman influence. Prior to the end of the second century BC, it was a major importer of Italian, African and Ebusitanian foodstuffs and ceramics. Moreover, the appearance of appreciable quantities of regular Roman coinage towards the later second century may indicate the presence of a considerable body of Roman and Italian settlers.⁵⁷ However, the impact of Emporion upon its hinterland seems to have been correspondingly less than that of Tarraco. Although important Indiketan settlements like Mas Castellà (Pontós) were abandoned in the course of the second century BC, new Roman farms are not documented until the end of the second and beginning of the first centuries BC.

Acculturation and the Romanization of coastal Citerior up to the mid-first century BC

The first century BC sees an acceleration in the spread of Ibero-Roman acculturation in the north-east and the gradual breaking-down of the Iberian settlement pattern. One of the principal catalysts in this was

the construction of a totally Roman town at Emporion. The garrison overlooking the Greek port was demolished and the entire plateau covered by a 21 hectare double-settlement (Fig. 10.6). It has been conjectured that the northern half may have been settled by Indiketes.⁵⁸ The southern sector forms an elongated rectangle surrounded by a monumental stone and concrete wall and subdivided by a regular street grid. At the heart of this was a capitolium, cryptoporticus and forum (Fig. 10.7), whose plan and construction are startlingly similar to contemporary monumental centres in central Italy.⁵⁹ The archaeological evidence suggests a date of *circa* 100 BC and suggests that that this is the earliest known example of true Roman urban planning in Iberia. Moreover, the discovery of an inscription at the site has given rise to the hypothesis that the new town may have been a *colonia Latina*, founded by Marcus Iunius Silanus the governor of Citerior in 113 BC.⁶⁰

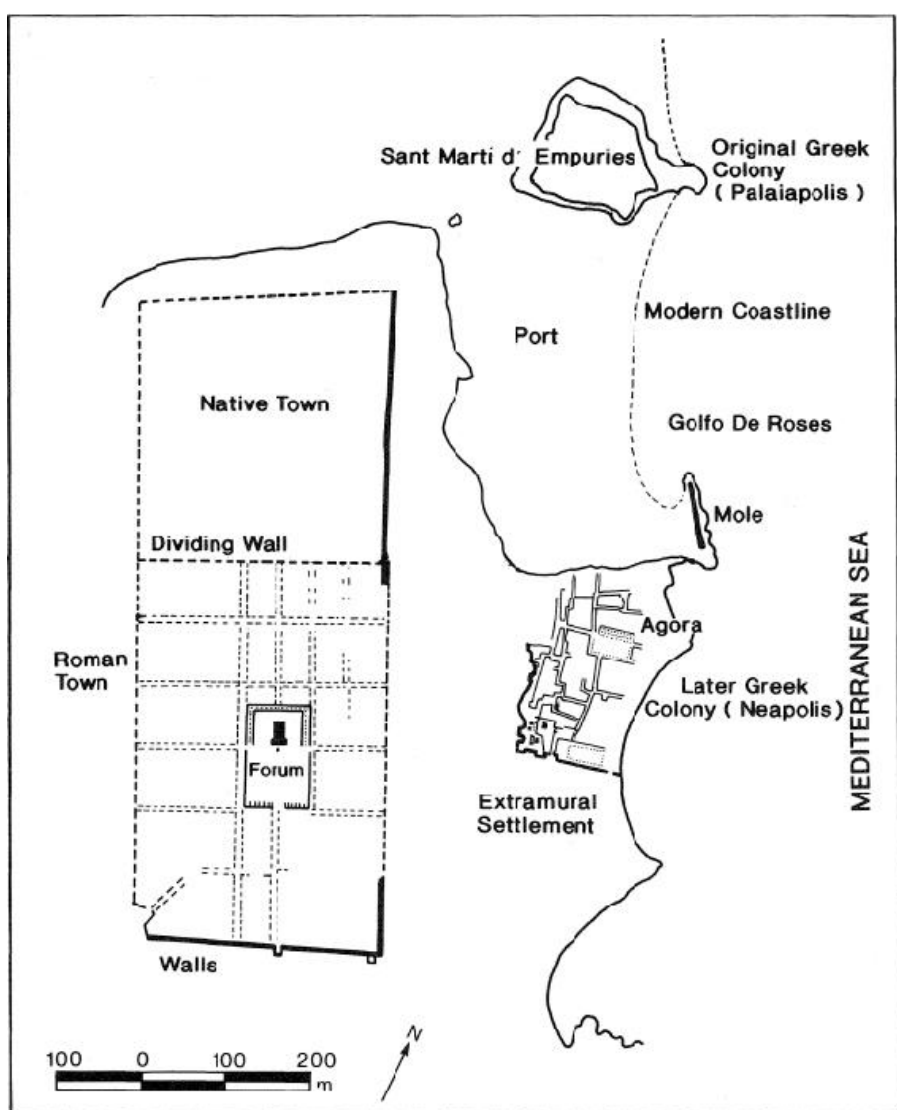


Fig. 10.6. Emporion (Empúries) at the end of the second century BC.

If the Roman town at Emporion was indeed a *colonia Latina*, then one might expect some evidence for a break in the pre-existing pattern of landholding, as the Italian colonists received their plots of land within its territory. This might perhaps explain the first appearance of new Roman farms in the Empordà at this time, appreciably later than those in the Ager Tarraconensis. At the Olivet d'en Pujol (Viladamat), a few kilometres to the west of Emporion, excavations have uncovered a rectangular walled enclosure housing a large number of storage dolia (Fig. 10.8), dating to some time after the later second century

BC.⁶¹ A similar site was discovered some distance to the south at Puig Rodon (Corçà),⁶² and at the Camp Del Bosquet (Camallera).⁶³ These new farms were functional units dedicated to the processing and storage of agricultural staples in the hinterland of Emporion. As such, it is possible that they represent an intensification in the production of agricultural surplus by the colonists or their tenant-farmers. Such a surplus had a ready market at Emporion, where the goods could be converted for coin in its increasingly monetized economy⁶⁴ and used in the payment of rents and taxes, or exchanged for imported luxuries.

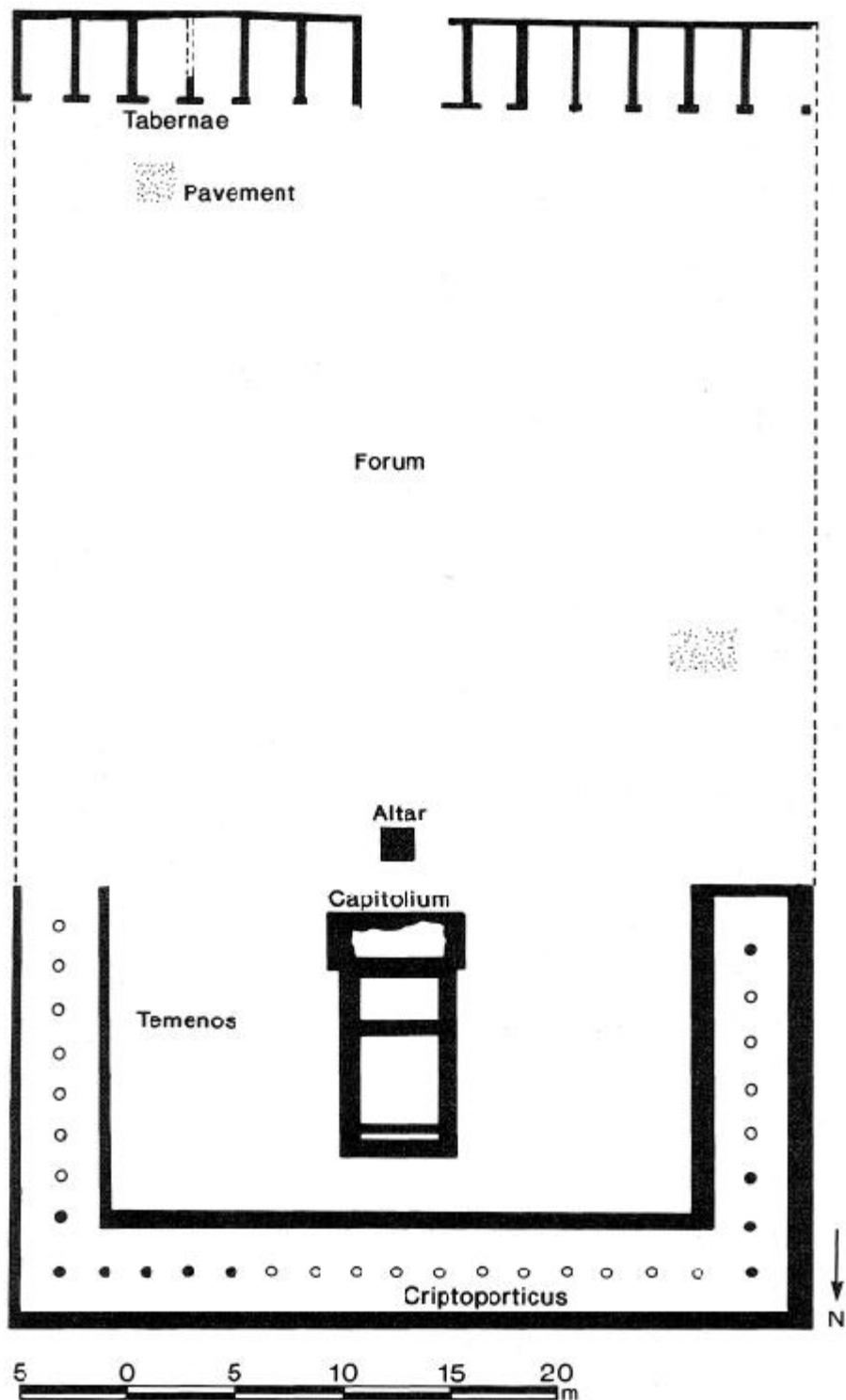


Fig. 10.7. Late second century BC forum complex at the Roman town of Emporion (after

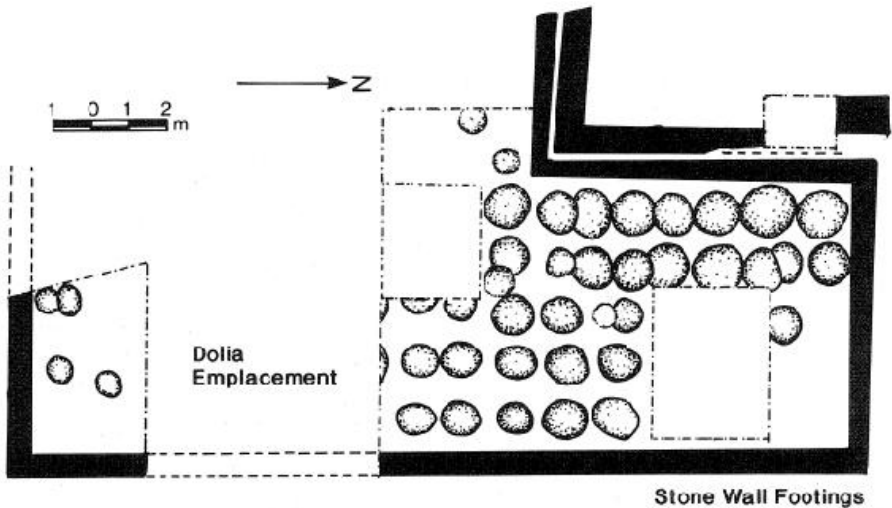


Fig. 10.8. Late second century BC Roman farm at the Olivet d'en Pujol (Viladamat, Girona)

There seems little doubt, therefore, that the foundation of the Roman town at Emporion as an important market and centre of Roman influence had a local impact similar to that of Tarraco, over fifty years earlier.⁶⁵ There was also an important regional impact. This is reflected in changes in settlement dynamics amongst the Indiketes, Ausetani and Laietani, as the foci of Iberian settlements moved into the lowlands. This allowed local élites to profit from a more active involvement in the networks of exchange which spread out from Emporion and Tarraco.

Between the late second and early first centuries BC there was a major realignment of the settlement pattern of the Indiketes/Ausetani to the south-west of Emporion. A number of important hill-top sites like the Puig d'En Carrerica (Canet d'Adri), Camp de la Vinya (Flaçà), Sant Grau (Sant Gregori), Puig de Can Cendra (Bescano) and Les Serres (Sant Martí de Llemena) were abandoned, together with lowland storage depots like Bobila de Can Rafael Ginesta (Cornella de Terri) and Can Figa (Cornella de Terri). The new centre of settlement, Gerunda (Girona), was founded on a rocky knoll on a tributary of the river Ter where it cuts through the Gavarres hills. It also lay astride the Via Hercula (the later Via Augusta), which ran from Narbo (modern Narbonne) to the north, to Gades in southern Spain. It was

planned as a prestigious centre, whose high status was underlined by the construction of monumental town walls, between 100 and 75 BC.⁶⁶ Little is known about its internal layout. However, its geographical location ensured that it soon became a secondary centre for the re-distribution of Italian imports from Emporion, as well as local products. The striking success of this Iberian sponsored town can be measured by the appearance of new farms within its territory, as at the Pla d'en Horta (Sarria de Ter), possibly Vilauba (Camós) and Can Pau Birol (Bell Lloc), during the first century BC.⁶⁷

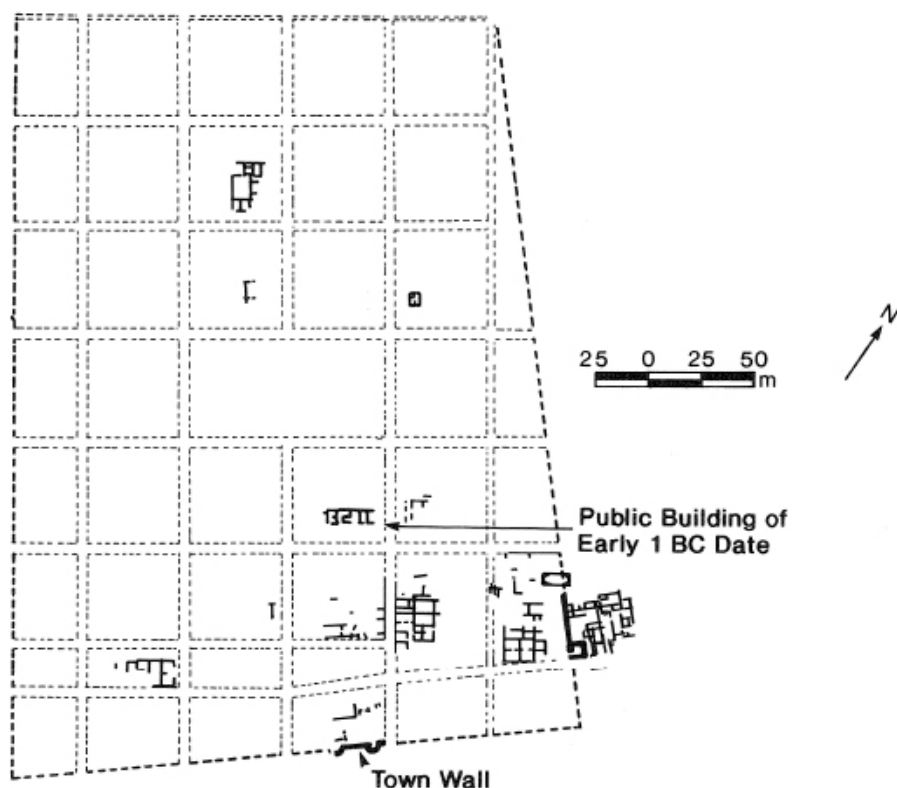


Fig. 10.9. The Ibero-Roman town of Baetulo (Badalona)

The early first century BC also sees the foundation of three towns similar to Gerunda along the coast to the south of Emporion, in the territory of the Laietani. Baetulo (Badalona), Iluro (Mataró) and to a lesser extent Blandae (Blanes), appear to be successors to dense Iberian settlement in the coastal mountain chain. Burriac (Cabrera de Mar), in the uplands to the west of Iluro, and Turó d'en Boscà (Badalona), to the north of Baetulo, were amongst the most important settlements.⁶⁸ They may have been the mint-sites for the ILTURO and BAITOLO coins, and were both abandoned in the early first century

BC. The successor town of Baetulo had a rectangular plan (10 hectares) enclosed within a stone wall similar to that at Gerunda (Fig. 10.9). There is evidence of internal planning, consisting of a large strip-building (c. 30 x 10m) with stone footings. This was built in the second quarter of the first century BC.⁶⁹ Otherwise there is no evidence for public or private buildings prior to the early first century AD.⁷⁰ The evidence for the successor towns of Iluro⁷¹ and Blandae⁷² is not as clear, but suggests that, essentially, they were similar to Baetulo. A similar succession from diffuse Iberian settlements to a centralized Roman town may also account for the appearance of Roman Dertosa (see [note 110](#)).

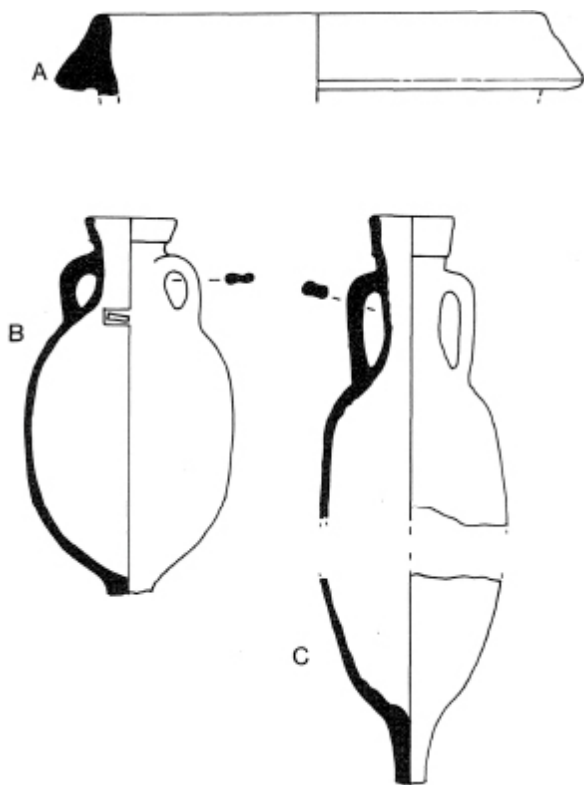


Fig. 10.10 Wine amphorae manufactured in eastern Spain during the second and first centuries BC.

A. Rim belonging to a local imitation Greco-Italic/Dressel 1A amphora (Ager Tarraconensis)
 B. Tarraconense 1/Laietania 1 amphora (Empúries) C. Pascual 1 (Aderro)

From the moment of their foundation, all three coastal towns imported a large quantity of Italian luxury imports, probably secondary exchange re-directed from Emporion. The towns themselves acted as markets for neighbouring Iberian communities in the coastal

uplands. As at Gerunda, the distribution of Italian imports on hinterland sites⁷³ reflects their success. Moreover, the appearance of new farms, or villas, shows that the intensification of agricultural production was not limited to the territories of Tarraco and Emporion. At Cal Ros de les Cabres (Masnou), a new farm with stone and mortar footings and decorated with mosaic tesserae set into pink mortar floors was built between the later second and early first century BC.⁷⁴

During the first half of the first century BC, the commercialization of agricultural surplus centred at sites had begun to achieve a degree of sophistication. Estates in the vicinity of Baetulo were producing wine of a sufficiently good quality to be marketed at Baetulo⁷⁵ (Fig. 10.10).

These developments show that the foundation of Emporion had a major regional impact. Although the diffusion of Italian imports had begun to destabilize the Iberian settlement hierarchy during the second century BC, it was not until the foundation of the Roman town at the end of the century that it actually started to break down. Local élites refounded their settlements in the lowlands at points where they stood to profit from the control of growing commercial networks focused at Emporion.⁷⁶

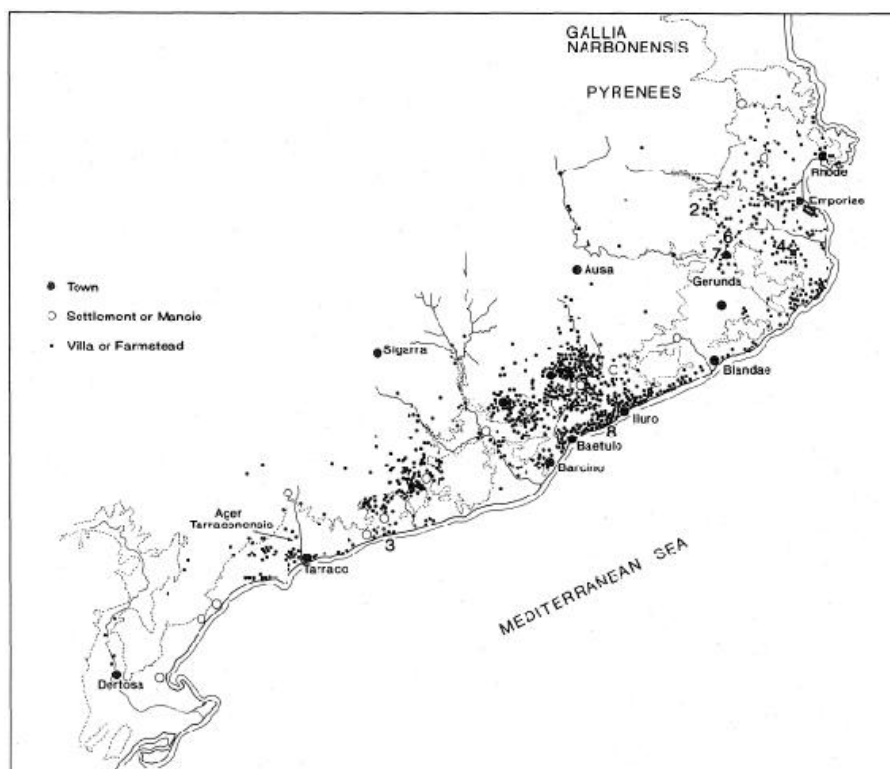


Fig. 10.11. The density of Roman settlement in north-eastern Hispania Citerior/Tarraconensis during the Late Republic and Empire. Based upon published sites and largely compiled before 1983.

Numbers refer to villas/farms mentioned in the text: 1. Olivet d'en Pujol 2. Vilauba 3.

L'Argilera

4. Puig Rodon 5. Camp del Bosquer 6. Pla d'en Horta 7. Can Pau Birol 8. Cal Ros de les Cabres

The Romanization of coastal Citerior from the mid to later first century BC

The further disintegration of the Iberian settlement pattern and the Romanization of Iberian communities during the later first century BC was hastened by the development of a coherent regional administrative system (Fig. 10.11). This was based upon a hierarchy of Roman and Iberian inspired towns, linked together by a network of roads, all of which focused upon Tarraco.

The development of Roman towns

It was the pre-eminent strategic role of Tarraco which ensured that this town not only became the major regional centre of the north-east, but capital of the province of Hispania Citerior, later Tarraconensis, as well. During the Civil War of 49-44 BC, its inhabitants had supported Pompey's cause until Caesar's victory at the battle of Ilerda in 49 BC. Thereafter they lost no time in switching their alliance to Caesar, paying him tribute and supplying his army. Shortly afterwards, Caesar chose Tarraco as the venue for a meeting between himself and his supporters throughout Citerior.⁷⁷ This mark of regional pre-eminence was consolidated by the grant of colonial status to the town between 45 and 27 BC.⁷⁸ Unlike Emporion, this does not seem to have involved either a settlement of Roman citizens or a replanning of the layout of the town. In the years 26-24 BC, Tarraco rose to even greater prominence. It was Augustus' temporary residence away from Rome while he planned the military conquest of north-western Spain. For these three years, and perhaps again in 15-14 BC, Tarraco was the de-facto centre of power in the Roman Empire.⁷⁹ This exceptional role, and the prestige in which Augustus was held, was symbolised by the dedication of an altar to the joint veneration of Rome and Augustus at the town.⁸⁰ This may have been located in the Augustan forum built in the heart of what had been the Iberian settlement.⁸¹ Finally, in the provincial reorganization of 16-13 BC, Tarraco was appointed the administrative capital of the Imperial province of Hispania Tarraconensis.⁸² As such, it was now the official seat of the Roman governor, his attendant officials and a garrison seconded from the

legions stationed in north-west Tarraconensis.⁸³

By the end of the first century BC, therefore, Tarraco had become the focus of political and religious loyalties for communities throughout much of the Iberian peninsula. From at least the middle of the second century BC, it had been linked to Emporion, Saguntum, Carthago-Nova by the Via Herculea which went from Italy through Gaul to Gades in Hispania Ulterior.⁸⁴ As the Via Augusta this road was upgraded between 12 and 6 BC and formed the basis of a wider network of secondary roads which reached communities throughout the region⁸⁵ (Fig. 10.12).

Curiously, however, these very important changes are not reflected in the distribution or density of rural settlement in the Ager Tarraconensis. Analysis of survey data suggests that the pattern of settlement which had developed in response to the mid-second century BC changes, continued largely unchanged into the first and second centuries AD. By contrast, the commercialization of agricultural surplus on estates in the eastern sector of the Ager was growing very rapidly. Fine quality wine was sealed in new varieties of amphora from the earlier first century BC onwards.⁸⁶ These are very common on rural sites in the area and at Tarraco itself, helping to undercut the import of Italian wine.

By the side of Tarraco's pre-eminent political importance, Emporion remained primarily a commercial centre. The literary evidence⁸⁷ suggests that Caesar installed a contingent of veterans here. This seems to have precipitated a wholesale reorganization of all the communities at the site, and is reflected in the numismatic and archaeological evidence. The local coinage issued between 44 and 27 BC suggests that Emporion became a *municipium*.⁸⁸ It has been suggested that, in a juridical sense, this signals the fusion of all the different communities at Emporion: the Greeks in the port area, the Romans in the Roman town, the adjacent Indiketes and the Caesarian veterans.⁸⁹ Indeed, the existence of these different communities may have been perpetuated in the plural name Emporiae, by which the town was known under the early Empire. By the Augustan period, the *municipium* of Emporiae was distinguished by the construction of a basilica within the forum of the Roman town.⁹⁰ There is also evidence for important building programmes throughout the town: large private houses in the port area,⁹¹ huge mansions at the Roman town,⁹² renovation of the street grid in the Roman town and the construction of a gymnasium and wooden amphitheatre to the south.⁹³ Much, if not all, of this building activity was probably motivated by social competition amongst the élite of Emporiae. Towards the end of the

first century BC, for example, an inscription records one of the town magistrates paying for the construction of a small market place (*campus*).⁹⁴

Emporiae, therefore, yields early evidence of the socially motivated building-activity which, through the first and second centuries AD was largely responsible for many of the public and private buildings in towns throughout coastal Tarraconensis. In economic terms the town continued to act as a major market for the region. Indeed, this cycle was sufficiently intense that, by the later first century BC, good quality wine was produced on a large enough scale to be bottled in amphorae manufactured at local estates.⁹⁵ However, the growing importance of Narbo (Narbonne) as a major port to the north and the foundation of a *colonia* at Barcino (Barcelona) to the south, meant that Emporiae was to become a secondary centre of only regional importance. By the later first century AD, it had entered upon a cycle of slow decline.⁹⁶

The most spectacular change to the urban network of the north-east, came with the foundation of a *colonia* at Barcino between 15 and 13 BC. This lay on the coastal plain between Tarraco and Emporiae, and was adjacent to a Laietanian hillfort at Montjuic.⁹⁷ This was a planned Roman urban settlement which had a regular layout (10 hectares), and which was enclosed by prestigious stone walls and towers (Fig. 10.13). The *colonia* may have been settled with discharged veterans from the Cantabrian wars. It was situated close to the Besós and Llobregat rivers, which ensured rapid communication with the great pre-littoral depression and the foot hills of the Pyrenees. It must also have played a part in the protection of the coast between Tarraco and Blandae, by virtue of the the forces at the disposal of the *praefectus orae maritimae*.⁹⁸

It is difficult to gauge the impact of the foundation of Barcino on the local settlement pattern, since much has been obscured by the sprawl of modern Barcelona. However several hillforts are known on the Collserola,⁹⁹ of which the Turó de la Rovira and the Turó de Can Olivé were abandoned in the course of the first century BC. Moreover new farm buildings with stone and mortar walls and concrete floors of similar date are known from the Llobregat valley.¹⁰⁰ Moreover, from the first century AD, the market offered by Barcino was strong enough to generate strong local wine production, and amphora kilns have been discovered in the region.¹⁰¹

The development of Ibero-Roman towns

There is little doubt then, that the foundation of Barcino had an important effect on the settlement pattern in the Plà de Barcelona and the lower Llobregat valley. The presence of colonists and others at the

town also constituted an important new market for those farms and estates which had already become established in the territories of Baetulo, Iluro and other neighbouring areas. The integration of the colonia into this regional framework was assisted by the construction of a detour from the Via Augusta in 8-7 BC. This ran through Iluro and Baetulo, linking them closely to the administrative centre at Barcino.¹⁰² Thus, from the later first century BC, there was an intensification in the commercialization of agricultural surplus in the territories of Baetulo and Iluro.¹⁰³ Similarly at the Laietanian spa-town beneath modern Caldes de Montbui which, too, became a focus for wine production. It benefitted from the river Caldes, a tributary of the Besós, which offered seasonal access to Barcino.¹⁰⁴

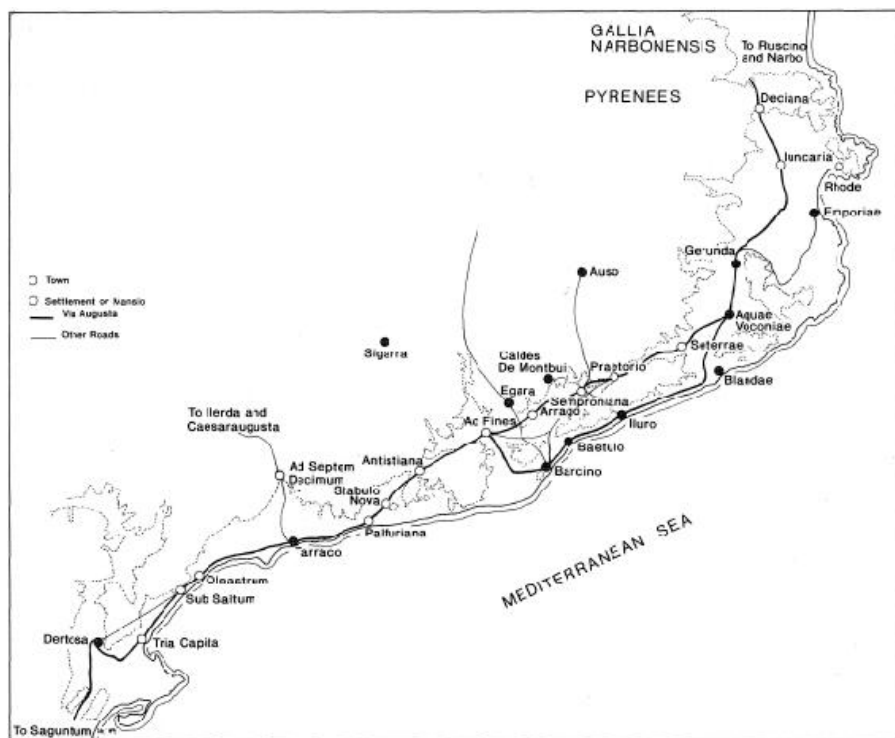


Fig. 10.12. The road network in north-eastern Hispania Citerior/Tarraconensis during the late Republic and early Empire. Rivers have been omitted to ease congestion (see however [Figs. 10.2 and 10.11](#)).

A similar process was at work in the hinterland of Gerunda. Thus, excavations at Vilauba (Camós), at the western edge of its territory, reveal the appearance of a sophisticated Roman-style farm. Further west, a kiln producing wine amphorae of first century AD date was discovered at Ermedás (Cornella de Terri).¹⁰⁵

By the beginning of the first century AD, therefore, wine from estates in different parts of the north-east was sealed in amphorae and marketed at centres like Caldes, Barcino, Baetulo, Iluro and Gerunda. It was also produced near modern Tivissa, in the hinterland of Dertosa (modern Tortosa). The wine was either consumed in the towns, found its way back to local estates, or was bought by merchants acting for buyers in different parts of the Western Empire.¹⁰⁶

The development of this flourishing local wine production is evidence of the success of the élites of Ibero-Roman towns in dominating the growing commercial networks which focused primarily upon Emporiae, Tarraco and, later, Barcino. The same is true of the large quantities of fine pottery and amphorae from Italy, Southern Gaul, the Eastern Mediterranean, North Africa and Southern Spain which were imported to towns and re-distributed to farms and rural sites throughout the north east. The towns began to develop as centres of wealth, power and prestige. The pressures of living-space at Baetulo, for example, were sufficiently strong for the eastern wall of the town to be demolished and for commercial and residential buildings to spread eastwards.¹⁰⁷ Before the end of the first century BC, social competition within the towns and inter-urban rivalry had given rise to the appearance of public and private buildings that were essentially Roman. Urban developments at Tarraco probably provided the model for the opus signinum floors decorated with patterns executed in white mosaic tesserae, at Baetulo and Iluro.¹⁰⁸ In view of this and their later development, it comes as little surprise to find that by the early first century AD, Baetulo, Iluro, Blandae and Gerunda may all have achieved municipal status.¹⁰⁹ This meant that although the towns retained their own constitutions and magistrates, those who were elected to magistracies gained the prestigious status of Roman citizenship.

Conclusion

After just over two-hundred years of Roman involvement in north-eastern Spain, the indigenous settlement pattern had finally disintegrated. By the late first century BC, it was dominated by the Roman towns of Tarraco, Barcino and Emporiae and complemented by lower-status Ibero-Roman towns like Gerunda, Baetulo, Iluro, Blandae, Caldes de Montbui, Gerunda and Dertosa. Settlements like Egara (Terrassa), and Auso (Vic) were also of Iberian origin, as perhaps were Sigarra (Prats del Rei) and Aquae Calidae (Caldes de Malavella).¹¹⁰ In any event, available evidence suggests that these developed later, gaining important regional status. Dertosa, for instance, was a

Caesarian *municipium* whilst Egara became a *municipium* during the Flavian period.¹¹¹ At the same time, most of the surviving Iberian hillforts and other settlements were finally abandoned.¹¹²

The persistence of Iberian settlements until this late date is not so remarkable when it is remembered that tribal consciousness was still strong enough for Caesar to refer to individual peoples of the north east by name.¹¹³ This period also witnessed the disappearance of the last of the traditional Iberian ceramic products, like the hole-mouthed amphorae and fine wares.¹¹⁴ These had evolved in response to the needs and pattern of the Iberian settlement system. Faced with its disintegration and the appearance of the new urban network dominated by Roman towns, they disappeared.

There were also a number of lowland settlements whose existence has been revealed to us by Roman road itineraries of the second century AD.¹¹⁵ Seterrae (Hostalrich), Iuncaria (nr. Figueres), Deciana (? San Julian), Praetorio (Llinas del Vallès), Semproniana (Granollers), Antistiana (? Vilafranca del Penedès), Ad Fines (Martorell), Palfuriana (? Calafell), Oleastrum (Ametlla de Mar), Ad Tria Capita (?) and Ad Septimum Decimum (nr. Valls) were all located on the Via Augusta or branch roads. Thus it is more likely that they represented road stations than a development of pre-existing Iberian settlements.

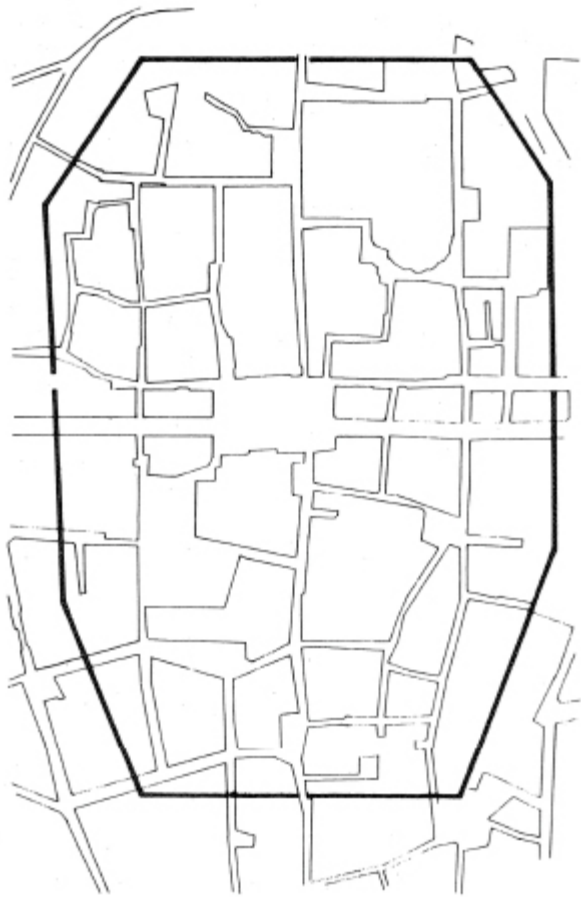


Fig. 10.13. Plan of the Augustan walls of Barcino superimposed upon the modern street plan of Barcelona (after Granados 1984).

By the late first century BC, all these communities were integrated within the newly organized administrative framework of Tarraconensis and focused on the seat of the provincial governor at Tarraco. The Augustan period also witnessed a reorganization of the system of taxation.¹¹⁶ This involved the progressive regularisation of a coinage in bronze, brass, gold and silver, issued centrally at Rome and Lyons, between 23 BC and the end of the first century AD. This new coinage formed the principal means of tax assessment and payment and gradually obviated local Iberian mints. By the mid-first century BC, bronze coins with Iberian lettering were still issued at UNTIKESKEN, KESE, BAITOLO and ILTURO, whilst by the Augustan period, these had dwindled to Latin inscribed issues from the *colonia* of Tarraco, and the *municipia* of Emporiae and Ilergavonia Dertosa. By the reign of Caius, in the earlier first century AD, these had

disappeared altogether.¹¹⁷

This article is presented as a working model for our understanding of the processes at work in the development of the coastal communities of Hispania Citerior between the early second and later first centuries BC. Returning to the five themes, or variables, outlined at the start, it is important to note that:

1. There is no evidence of any administrative rationale or framework applied by Rome to the communities of the north-east prior to the second quarter of the second century BC. Subsequently, Rome used selected major Iberian settlements at focal points for collecting together the dues of newly introduced taxes. The settlements were then responsible for converting this into coinage. It was only with the designation of Tarraco as provincial capital in the late first century BC, and the foundation of Barcino, that any coherent administrative structure emerges.

2. The introduction of a system of regular taxation in the earlier second century BC does seem to have stimulated an agricultural surplus large enough for Iberian communities to import prestigious luxuries and foodstuffs on a wider scale and in greater volume than hitherto.

3. This was an important factor in the abandonment of Iberian settlements and the breakdown of the existing settlement pattern. The ubiquity of imports to settlements of every kind helped to undermine the prestigious monopoly that had been enjoyed by the élite of the larger settlements.

4. It was essentially wider Roman strategic interests in the Iberian peninsula which promoted Emporion, Tarraco and Barcino as administrative centres of the first order in north-eastern Citerior.

5. From the first century BC, important Ibero-Roman centres like Gerunda, Baetulo, Caldes de Montbui and Dertosa emerge as new high status towns which by the later first century BC/early first century AD are the scene of building activity motivated by social competition and inter-urban rivalry.

It is clear, therefore, that the Romanization of the coastal communities of north-eastern Citerior was a unique blend of Roman strategic expediency and Iberian response and adaptation. Moreover, rather than starting with a preconceived model, the key to understanding the processes of Romanization in the Hispaniae is to define local variables and to incorporate these into regional models. The sheer complexity of the social processes and the stresses of change demand nothing less.

Notes

It should be noted that the research for this article was completed in 1987 and it has not been possible to incorporate most of the more recent works into the text, notes or bibliography. These do not, however, alter the substance or significant details of the work presented here.

- 1 Especially the Urnfield culture from south-eastern France: Martín 1977, 187ff
- 2 For Phoenician imports, see Arteaga, Padrò and Sanmartí 1986, 303ff
- 3 Junyent 1981, 39; Ruiz de Arbulo 1984, 124ff
- 4 Following the definition of Rathje and Sabloff 1973-1974, 222
- 5 Villaronga 1981, 42ff
- 6 Crawford 1985, 86ff; for Emporitan silver, see Amoros 1933 and 1934
- 7 Sanmartí and Padrò 1977, 157ff
- 8 García y Bellido 1948
- 9 For example, Strabo's Geography 3.4.6-10
- 10 The sites of Puig de Serra (Serra de Daró) and Els Socors (Canapost: Nolla and Casas 1984, nos. 209 and 188) may have been satellites of the Puig de Sant Andreu (Martín 1985, 10ff). A general account of Iberian settlement and society is to be found in Jordá, Pellicer, Acosta and Almagro Gorbea 1986, 481-509
- 11 Barberà 1982-1983, 146-150 (Burriac); Martín 1985, 21 (Puig de Sant Andreu)
- 12 Castro 1976; 1980
- 13 The Iberian pottery kilns of Fontscaldes (Colomines and Puig y Cadafalch 1915-1920, 602-605), for example, are only a few kilometres to the north of the Iberian settlement at El Vilar (Valls)
- 14 Sanmartí, J, Santacana and Serra 1984
- 15 One lacks, for example, the thorough and systematic research into Iberian settlement patterns currently being undertaken in Jaen province: Ruiz Rodríguez *et al.* 1985; Ruiz Rodríguez and Molinos Molinos 1981; a general survey of Iberian settlements is to be found in Jordá, Pellicer, Acosta and Almagro Gorbea 1986, 485ff
- 16 Livy XXI 61
- 17 Livy XXXIV 9; Ruiz de Arbulo 1984, 121ff (metals); Almagro 1953, 398 illustrates Iberian amphorae which carried foodstuffs produced by Iberian communities
- 18 Richardson 1986, 20ff; Keay 1988, 25ff for a general account
- 19 Livy XXI 60-61; Aquilué and Dupré 1986, 14ff and Miró M. 1987, discuss the Iberian predecessor of Tarraco
- 20 Livy XXV 37-39
- 21 Livy XXVIII 24-34; XXIX 1-3
- 22 Richardson 1986, 62ff discusses the reasons for the Roman presence in Iberia after 206 BC
- 23 Livy XXXIV 8-21
- 24 Discussed by Richardson 1986, 75ff; Albertini 1923
- 25 Livy XXVI 19
- 26 Fabra and Burguete 1986 (El Vilar); Pallarès R. 1982, 218-219; 1984

(Castellet de Banyoles)

27 Aquilué *et al.* 1984, 36ff

28 Sanmartí, Nolla and Aquilué 1983-1984, 125ff

29 Hauschild 1976-1977

30 Following the hypothesis of Aquilué and Dupré 1986, 16ff

31 Miró, M., 1987

32 Livy XL 39

33 Appian VI 45

34 An inscription from Tarraco (Alföldy 1975, nr. 5) may refer to the Magister of such a community: (...) L(ib) EPHES(ius...)S MAG (istri)

35 Wilson 1966, 13-18 discusses these communities

36 Mayer and Rodà 1986, 345 (road network); Nolla 1987a, 292-3 (Emporion)

37 Hopkins 1980, 101ff on this point

38 See, for example, Muñiz Coello 1982, 50ff

39 Richardson 1976

40 Crawford 1985, 95

41 Livy XXXIV 21; some of these mines may have been located in the vicinity of Bellmunt del Priorat (Tarragona)

42 Richardson 1976 and 1986, 114

43 If one accepts the arguments of Crawford 1985, 95ff. By contrast, Villaronga 1979, 119-122 suggests a much earlier date for the introduction of the Iberian bronze coinage. Knapp 1987, 19ff, 21-22, looks at other interpretations of the significance of Iberian coinage.

44 Crawford 1985 101, Fig. 18; Villaronga 1979 and Guadán 1980 for analyses of individual mints

45 Perhaps to be located in the vicinity of Cabrera de Mar (Mataró, Barcelona): it issued bronze coinage

46 Perhaps to be located within the Comarcas of Bages and Baix Llobregat (Barcelona): it issued bronze coinage

47 Probably located near Llerona del Vallès (Barcelona): it issued bronze coinage

48 Possibly located in the uplands immediately to the north west of Badalona (Barcelona); it issued bronze coinage

49 Villaronga 1977, 5; it issued bronze coinage

50 Perhaps to be located in the vicinity of modern Vic; it issued bronze coinage

51 For example see Ripollés 1982, 367, for the limited distribution of known coins from the mint of Baitolo

52 Livy XLIII 2

53 Indeed, the survey work (conducted by the writer and M. Millett) has revealed limited quantities of Greco-Italic and Dressel 1A amphorae being manufactured on local sites (Fig. 10.10), as farmers sought Tarraco as a regular market for their wine

54 Terré 1987, 221

55 Calafell, Barcelona: Sanmartí, J., Santacana and Serra 1984, 16ff

56 Miret, Sanmartí and Santacana 1984, 178ff

57 Crawford 1985, 99; the volume of Roman regular coinage at the site can be appreciated in Ripoll, Nuix and Villaronga 1979

58 Ruiz de Arbulo 1987, 313ff

59 Aquilué *et al.* 1984 48-77

60 Aquilué *et al.* 1984 128-132, and Aquilué *et al.* 1986; the inscription has

been expanded to read: M.IUN(io d.f.silano)/PRO (praetori.hisp.cit or he or p.h.c.) CO(loni coloniae-or-loni et incolae)

61 Nolla and Casas 1984, 114-116

62 Puig Rodon (Corçà, Girona): Nolla and Casas 1984, 127-131

63 Camallera (Girona): Casas 1980

64 Ripollés 1982, 333-357, analyses the volume of coinage in circulation at Emporion and demonstrates the rise in the proportion of coins issued at Rome between 195/133BC-72/27BC, from 7.86% to 23.07%

65 The Roman population at Emporion and, perhaps, Tarraco may have been further augmented by Marian exiles from central Italy in the late 80's, who fought in Sertorius' armies and later formed the basis of Pompey's clientele in Citerior. The evidence, however (presented in Wilson 1966, 29-32) does not specifically mention such settlement at those towns, although it is known that Tarraco probably remained loyal to Sertorius down to his final defeat by Pompey in 72BC (Alföldy 1978, IV 1.b)

66 Nolla 1979-1980

67 Respectively: Oliva 1970 and Nolla and Casas 1984, 181ff; Roure and Keay 1985, 16ff; Serra Ràfols 1942, 40ff

68 Burriac: Barberà and Pascual 1979-1980; Turó d'en Boscà: Junyent and Baldellou 1972

69 Padrós 1985, 43-45, Fig. 13; Aquilué and Subias 1984, 358ff suggest that the architects may have been of Italian origin

70 Guitart 1976, 243; Padrós 1985, 96ff

71 Clariana 1984

72 Del Vila M. *et al.* 1977-1978

73 For example, see Mapa 3 in Prevosti 1981a, which illustrates the density of the distribution of Black Glaze B wares in the hinterland of Baetulo

74 Prevosti 1981, site nr. 102; other apparently new foundations of this date have been discovered at Vinya del Sr.Mas (Prevosti 1981, 100), Riera de Teià (Prevosti 1981, 104), and at the Veinat del Sant Crist (Prevosti 1981, 164)

75 The latest Iberian inhabitants at Burriac, and those at Baetulo, began producing amphorae imitating the Italian types Dressel 1A and B in the first half of the first century BC (Comas *et al.* 1987)

76 The foundation of Gerunda, Baetulo and Iluro have been interpreted in a different light by Spanish scholars. Guitart (1976) and Prevosti (1981, 1981a) see the foundation of Baetulo and Iluro and the appearance of local villas as a result of settlement by Marian exiles from Rome in the 80's BC. Nolla 1978-1980, conversely, sees Gerunda as a strategic foundation undertaken during the Sertorian wars (82-72BC). In none of these cases is the historical, epigraphic or archaeological evidence explicit enough to support such hypotheses: see also note 65

77 Caesar Civil War II 21.5

78 Alföldy 1978, V.1.a

79 Suetonius, Augustus 26, 3 (first visit); Cassius Dio 54, 23,7, records Augustus' second visit to Hispania, although he does not explicitly mention a visit to Tarraco

80 Fishwick 1982

81 Fishwick 1982, 229-230 suggests a possible location in the vicinity of the "forum" excavated and identified by Serra Vilaró (1932). This large building has been re-examined (Mar and Ruiz de Arbulo 1986) and plausibly re-identified as the basilica of the municipal forum

- 82 Albertini 1923
- 83 Alföldy 1978, VII 1.b; Mackie 1983, 190 note 4
- 84 Palli 1985, 29ff
- 85 Dated by an Augustan milestone discovered in the immediate vicinity of the town: Alföldy 1975, nr. 934 (12 BC)
- 86 The earlier form, the Tarrakonense 1/Laietana 1, was manufactured at some time prior to 30 BC onwards (Fig. 10.10). Examples have been found at the theatre of Tarraco (Nolla 1987, 219) and on sites in the Ager Tarrakonensis. The later form, Pascual 1 (Fig. 10.10), is common in the town and in the surrounding country. Kiln sites for local amphorae of Late Republican and Early Imperial amphorae have been discovered in the hinterland of Tarragona, near Reus (Baix Camp) at La Boada and El Vilar (Massó 1978), and other sites
- 87 Literally, the text speaks of “Roman colonists” installed after the final defeat of Pompey’s sons in the Civil War: Livy XXXIV 9
- 88 Villaronga 1977, 6ff
- 89 Ruiz de Arbulo 1987, 314ff
- 90 Aquilué *et al.* 1984, 87ff and Fig. 52
- 91 Aquilué, Mar and Ruiz de Arbulo 1983
- 92 Nieto 1979-1980, 281ff and 313ff
- 93 Almagro 1956
- 94 Peña 1981 nr. 6
- 95 As in the hinterland of first century BC Tarraco, the sequence of amphora types carrying the wine seems to have begun with the Tarrakonense 1/Laietana 1, followed by the Pascual 1 and Dressel 2-4 at later dates (cf. note 86). Amphora kilns producing some of these and other forms, have been discovered at Llafranch (Palafrugell: Nolla, Canes and Rocas 1982) and at Palamos (Tremoleda 1987), to the south of Emporiae
- 96 For the later decline of Emporiae, see Keay 1981, 458 and Nieto 1983
- 97 Granados 1984
- 98 An official based at Tarraco: Mackie 1983, 184, 190 note 5
- 99 Gimeno 1984
- 100 At sites like Ca N’Esplugues (Pallejà: Granados and Solias 1982) and Nuestra Senyora de Sales (Vi ladecons: Solias 1983). Bjaot *et al.* 1984, 95ff provide general (and uncritical) background data
- 101 Pascual 1 wine amphorae were manufactured at Sant Boi de Llobregat, and Dressel 2-4 amphorae at Can Tintorer and Santa Maria de les Feixes: Pascual 1977. For other kilns in this area, see Granados and Rovira 1987
- 102 Pallarès F. 1975
- 103 This is reflected in the bottling of local wine amphorae, produced on kiln sites in the territories of both towns (Pascual 1977), on a much larger scale than hitherto. As at Tarraco and Emporiae, the Tarrakonense 1/Laietana 1 seems to have been the earliest type to have been produced in the first century BC (Comas 1985, 65ff), with the Pascual 1 and Dressel 2-4 following later
- 104 Pascual 1977, 54ff
- 105 Roure, Castanyer, Nolla, Keay and Tarrús 1988 (Vilauba); Jones, Millett and Keay 1983, 31ff (Ermedás)
- 106 Nolla *et al.* 1980 and Revilla 1982-1983 (Tivissa); for distribution see Tchémia 1971 and Miró, J., 1987 (Gaul) and Williams 1981 (Britain)
- 107 Guitart 1976, 243ff
- 108 For example, in the Calle de Fluvia: Guitart 1976 114, Lam.XXX 1

(Baetulo); Clariana 1984, 94, and Ribas 1980 (Iluro)

109 The probable significance of Pliny's statement (NH.III 4.22), that all four towns were "oppida civium Romanorum". See discussions by Guitart 1976, 19ff and Nolla 1979-1980, 46ff

110 The origins of Dertosa are unclear (Genera and Arbeloa 1987). Recent excavations suggest that the Roman town did not appear before the Augustan period and that its predecessor lay in various neighbouring Iberian settlements. On the other hand it is clear that Dertosa gained the status of *municipium* under Caesar. Evidence for the Iberian predecessor of Egara (Terrassa) is discussed briefly in Almagro *et al.* 1945, and that for Auso (Vic) in Molas 1979. The little available archaeological evidence for Aquae Calidae is discussed by Serra Ràfols 1941

111 CIL II 4494; discussed in IRC 100 nr. 66

112 A similar process whereby a diffuse pattern of Iberian/Celtiberian settlement in the Ebro valley gradually gives way to one dominated by Roman towns in the Late Republic and Early Empire is discussed in Burillo 1986

113 Caesar *Civil War* I 60, refers to the tribes of the Ilgergaones and Ausetani, amongst others

114 These are rarely found in site contexts dating to after the end of the first century BC

115 Summarised in Roldan 1975, Appendix II, 209-279

116 Discussed in detail by Muñiz Coello 1982, 143ff

117 Villaronga 1979, 223-306

Bibliography

Albertini E. 1923, *Les Divisions Administratives d'Espagne Romaine*. Paris

Alföldy G. 1975, *Die römischen Inschriften von Tarraco* (2 vols). Berlin

Alföldy G. 1978, "Tarraco", in, Pauly-Wissowa *Real Encyklopädie der Klassischen Altertumswissenschaften* Sup. XIV 570-644

Almagro M. 1953, *Las Necropolis de Ampurias I. Barcelona*

Almagro M. 1955, *Las Necrópolis de Ampurias II. Barcelona*

Almagro M. 1956, El anfiteatro y la palestra de Ampurias. *Ampurias* 27-28, 1-20

Almagro M. *et al.* 1945, *Carta Arqueológica de España: Barcelona*. Barcelona

Amoros J. 1933, *Les drachmes emporitanes*. Barcelona.

Amoros J. 1934, *Les monedes emporitanes anteriors a les drachmes*. Barcelona.

Aquilué J. and Dupré X. 1986, Reflexions entorn de Tarraco en época tardo republicana. *Forum I*, Tarragona

Aquilué J. Mar R. and Ruiz de Arbulo J. 1983, Arquitectura de la Neápolis ampuritana. *informació Arqueológica* 40, 127-137

Aquilué X. and Subias E. 1984, Sobre la fundació de la ciutat romana de Baetulo (Badalona). In, *Protohistoria Catalana. 6 Colloqui International D'Arqueologia de Puigcerda*, Institut D'Estudis Ceretans, 353-359, Puigcerda.

Aquilué *et al.* 1984 = Aquilué X. Mar R. Nolla J. Ruiz de Arbulo J. and Sanmartí E. 1984, *El Forum Romà d' Empúries*. Barcelona

Aquilué X. *et al.* 1986, Una lapida dedicada a M.Iunius Silanus aparecida en el foro Romano de Ampurias. *Reunion sobre epigrafia Hispanica de Epoca Romano Republican*. Adas, 151-156

Arteaga O. Padrò J. and Sanmartí E. 1986, La expansión fenicia per las costas de

- Cataluña y del Languedoc. In, Del Olmo G. and Aubet M. (eds), *Los Fenicios en la Península Ibérica*, Vol.2, 303-314. Sabadell
- Barberà J. 1982-1983, Un paral·lel remot de l'edifici públic de Burriac (Cabrera de Mar), *Laietania* 2, 146-150
- Barberà J. and Pascual R. 1979-1980, Burriac, un yacimiento protohistórico de la costa catalana (Cabrera de Mar, Barcelona), *Ampurias* 41-42, 203-242
- Biajot et al. 1984, El poblamiento de la zona sur de la Layetania litoral en época Ibérica y Romana, *Arqueologia Espacial* 2, 93-110
- Burillo F. 1986, *Aproximación diacronica a las ciudades antiguas del valle medio del Ebro. Seminario de Arqueologia y Etnologia Turolense*. Colegio Universitario de Teruel
- Casas J. 1980, L'Estació Romana del "Camp del Bosquet" (Camallera, Alt Empordà) I. L'Aljub. *Revista de Girona* 93, 275-284
- Castro Z. 1976, Piezas discoidales en yacimientos del N.E. de Cataluña, *Cypsela* I, 173-195
- Castro Z. 1980, Fusayolas Ibéricas, antecedentes y empleo. *Cypsela* III, 127-146
- Clariana J. 1984, Notes sobre l'estructura urbana d'Iluro. *Faventia* 6/1, 89-112
- Colomines J. and Puig y Cadafalch J. 1915-1920, El fom Ibèric de Fontscaldes. *Anuari Del Institut D'Estudis Catalans* VI, 602-605. Barcelona
- Comas M. 1985, *Baetulo. Les Amfores*. Monografies Badalonines num.8
- Comas M. Martín A. Matamoro D. and Miró J. 1987, Un tipus d'ámfora Dr. 1 de producció Laietana. *De les Estructures Indígenes a l'Organització Provincial Romana de la Hispania Citerior. Jornades Internacionals d'Arqueologia Romana*, 372-378 *Granollers*
- Crawford M. 1985, *Coinage and Money under the Roman Republic. Italy and the Mediterranean Economy*. London.
- Del Vilà M. Genera M. Huntingford E. and Dolors Molas M. 1977, Aportaciones al Conocimiento de la Antigua Blandae. *Pyrenae* 13-14, 211-251
- Fabra M. and Burguete S. 1986, Introduccio a l'estudi del jaciment Ibèric de "El Vilar". *Quaderns de Vilaniu* 9, 55-78
- Fishwick D. 1982, The Altar of Augustus and the Municipal Cult of Tarraco. *Madrider Mitteilungen* 23,222-233
- García y Bellido A. 1948, *Hispania Graeca* (3 vols), Barcelona
- Genera M. and Arbeloa J.M.V. 1987, La Dertosa Romana i la seva influencia. *Tribuna d'Arqueologia* 1986-1987. Departament de Cultura, Generalitat de Catalunya, 81-90
- Gimeno X. 1984, Noves consideracions sobre el poblament Ibèric del Pla de Barcelona. *Faventia* 6/1, 113-136
- Granados O. 1984, La Primera Fortificacion de la Colònia Barcino. *Papers in Iberian Archaeology* (Eds. Blagg T. Jones R. and Keay S.), BAR International Series 193, 267-319
- Granados O. and Rovira C. 1987, Tres Nous Centres de Producció d'Amfores a l'Ager de la Colònia Barcino. *El Vi A L'Antiguitat. Economia Producció i Comerç al Mediterrani Occidental. I. Colloqui d'Arqueologia Romana*, 126-132, Badalona
- Granados O. and Solias J.M. 1982, Ca N'splugues, Pallejà. In, *Les Excavacions Arqueològiques a Catalunya en els darrers anys*. Departament de Cultura de la Generalitat de Catalunya, 285-286, Barcelona

Guadán de A.M. 1980, *La Moneda ibérica*. Madrid

Guitart J. 1976, *Baetulo. Topografia Arqueològica, Urbanismo e Historia*. Badalona

Hauschild T. 1976-1977, Torre de Minerva (Sant Magi). Una torre de la muralla

- Romana de Tarragona. *Boletín Arqueológico de Tarragona* 133-140, 49-73
- Hopkins K. 1980, Taxes and Trade in the Roman Empire (200BC-AD 400), *Journal of Roman Studies* 70, 101-125
- IRC= Fabre G. Mayer M. and Rodà I. 1984, *Inscriptions Romaines de Catalogne. I. Barcelone (sauf Barcino)* Paris
- Jordà F. Pellicer M. Acosta M. and Almagro Gorbea M. 1986, *Historia de España I. Prehistoria*. Madrid
- Jones R. Millett M. and Keay S. 1983, Fieldwork and Excavation in the Banyoles Area of Spain, 1982. *University of Durham and University of Newcastle-Upon-Tyne. Archaeological Reports for 1982*, 31-35, Durham
- Junyent E. 1981, Empòrion i la Iberització de Catalunya. *L'Avenç* 38, 36-41
- Junyent E. and Baldellou V. 1972, Estudio de una casa Ibérica en el poblado de Mas Boscà, Badalona. *Príncipe De Viana*, 5-67
- Keay S. 1981, The Conventus Tarraconensis in the Third Century AD: Crisis or Change? *The Roman West in the Third Century. Contributions from Archaeology and History* (King A. and Henig M. eds.), BAR International Series 109, 451-486, Oxford
- Keay S. 1988, *Roman Spain*. London
- Knapp R. 1987, Spain. In Burnett A. and Crawford M. (eds.), *The Coinage of the Roman World in the Late Republic*. BAR International Series 326, 19-41
- Mackie N. 1983, *Local Administration in Roman Spain AD 14-212*. BAR International Series 172
- Mar R. and Ruiz de Arbulo J. 1986, La Basílica de la Colònia Tarraco. *Forum* 3, Tarragona
- Martín A. 1977, Los orígenes de la Iberización en la zona costera del nordeste de Cataluña. *Simposi Internacional: Els Orígens Del Mon Ibèric. Ampurias* 38-40, 187-196
- Martín A. 1985, *Ullastret, Poblat Ibèric. Guies de jaciments arqueològics*. Generalitat de Catalunya, Departament de Cultura, Barcelona
- Massó J. 1978, *Reus Prehistoria I Antiguitat*. Reus
- Mayer M. and Rodà I. 1986, La romanització de Catalunya. Algunes questions. *Protohistoria Catalana. 6e Colloqui Internacional de Puigcerda*. Puigcerda 1984, 339-351
- Mayer M. and Rodà I. 1986a, La epigrafía Republicana en Cataluña. Su reflejo en la red viaria. *Epigrafía Hispanica de época Romano Republicana*. Zaragoza, 157-165
- Miret M. Sanmartí J. and Santacana J. 1984, Distribución espacial de núcleos ibéricos: un ejemplo en el litoral Catalan. *Arqueologia Espacial* 4, 173-186
- Miró J. 1987, Ví Català a França (Segle 1 a.c.-1 d.c), Una Síntesi Preliminar. *El Vi a l'Antiguitat. Economia Producció i Comerç al Mediterrani Occidental. I Colloqui d'Arqueologia Romana*, 249-268, Badalona
- Miró M. 1987, El Nucli Ibèric de Tarraco: dels seus inicis a la integració dins la ciutat Romana. *De les Estructures Indígenes a l'Organització Provincial Romana de la Hispania Citerior. Jornades Internacionals d'Arqueologia Romana* 284-290, Granollers
- Molas Ma D. 1979, Acerca de la Urbe Ausetanorum y la Ciudad Romana de Ausa. *Boletín del Seminario de Arte y Arqueología*, 189-202
- Muñiz Coello J. 1982, El Sistema Fiscal en la España Romana (Republica y Alto-Imperio). Zaragoza
- Nieto F.J. 1979-1980, Repertorio de la pintura mural Romana de Ampurias. *Ampurias* 41-42, 279-342
- Nieto F.J. 1983, Acerca del progresivo despoblamiento de Ampurias. *Rivista di Studi*

- Nolla J.M. 1987, Una Nova Amfora Catalana: La Tarraconense I. *El Vi a l'Antiguitat: Economia Producció i Comerç al Mediterrani Occidental. I. Colloqui d'Arqueologia Romana*, 217-223, Badalona
- Nolla J.M. 1987a, Empúries, creixement, crisis i Adaptació. Algunes consideracions. *De les estructures indígenes a l'organització provincial romana de la Hispania Citerior. Jornades Internacionals d'Arqueologia Romana*, 291- 297, Granollers
- Nolla J.M. Canes J.M. and Rocas X. 1982, Un fom romà de terrissa a Llafranc (Palafrugell, Baix Empordà). *Excavacions de 1980-1981. Ampurias* 44, 147-183
- Nolla J.M. and Casas J. 1984, *Carta Arqueològica de les Comarques de Girona. El poblament d'època romana al N.E. de Catalunya*. Girona
- Nolla J.M. Padró J. and Sanmartí E. 1980, Exploració preliminar del fom d'àmfores de Tivissa (Ribera d'Ebre). *Cypsela* III, 193-218
- Oliva M. 1970, Descubrimiento de una villa romana con mosaicos en Sarria de Dalt (Gerona). *Revista de Gerona* 50, 19-27
- Padrós P. 1985, *Baetulo. Arqueologia urbana 1975-1985*. Museu de Badalona
- Pallarès F. 1975, la Topografia i Els Orígens de la Barcelona Romana. *Cuadernos de Arqueologia e Historia de la Ciudad* 16, 5-48
- Pallarès R. 1982, El Castellet de Banyoles, Tivissa. *Les excavacions Arqueològiques a Catalunya en els darrers anys. Excavacions Arqueològiques a Catalunya* 1, 218-219, Barcelona
- Pallarès R. 1984, El sistema defensivo frontal del Castellet de Banyoles, Tivissa Ribera d'Ebre. *Pyrenae* 19-20, 113-125
- Pallí F. 1985, *La Via Augusta en Cataluña*. Barcelona
- Pascual R. 1977, Las Anforas de la Layetania. *Méthodes Classiques et Méthodes Formelles dans l'Etude des Amphores*. Collection de l'Ecole Française de Rome 32, 47-96, Rome
- Peña M J. 1981, Epigrafia Ampuritana (1953-1980). *Quaderns de Treball* 4. Barcelona
- Prevosti M. 1981, *Cronologia i poblament a l'àrea rural d'Iluro (2 Vols)*. Mataró
- Prevosti M. 1981a, *Cronologia i poblament a l'àrea rural de Baetulo*. Badalona
- Rathje W. and Sabloff J. 1973-1974, Ancient Maya Commercial Systems: a Research Design for the Island of Cozumel. *World Archaeology* 5
- Revilla V. 1982-1983, Homos Romanos en Tivissa (Ribera d'Ebre). *Butlletí Arqueològic* 4-5, 187-196
- Ribas M. 1980, Troballes de restes romanes en una casa de la Plaça Gran de Mataró. *Quaderns d'Arqueologia i Prehistòria del Maresme* 11-12, 372-376
- Richardson J. 1976, The Spanish Mines and the Development of Provincial Taxation in the Second Century BC. *Journal of Roman Studies* 66, 139-152
- Richardson J. 1986, *Hispaniae. Spain and the Development of Roman Imperialism 218-82 BC*. Cambridge University Press
- Ripoll E. Nuix J.M. and Villaronga L. 1979, La Circulacion monetaria en Emporion. *Symposium Numismatico de Barcelona I*, 45-55. Barcelona
- Ripollés P. 1982, *La Circulacion Monetaria en la Tarraconense Mediterranea*. Servicio de Investigacion Prehistorica. Serie de Trabajos Varios Num. 77. Valencia
- Roldán J. 1975, *Itineraria Hispana*. Valladolid/Granada
- Roure A. and Keay S. 1985, Excavaciones a la Vil.la Romana de Vilauba (Camós, Girona) 1979-1983. *Tribuna d'Arqueologia 1983-1984*. Departament de Cultura de la Generalitat de Catalunya, 15-18, Barcelona
- Roure A. Castanyer P. Nolla J.M. Keay S. and Tarrus J. 1988, *La Vil.la Romana de*

Vilalba (Camós). Centre d'Investigacions Arqueològiques de Girona. Sèrie Monogràfica Nr.8

Ruiz de Arbulo J. 1984, Emporion y Rhode. Dos Asentamientos Portuarios en el Golfo de Rosas. *Arqueología Espacial* 4, 140-140

Ruiz de Arbulo J. 1987, La Evolución Urbana de Emporion en Epoca Republicana. La Complejidad de una Tradición. *De les Estructures Indígenes a l'Organització Provincial Romana de la Hispania Citerior. Jornades Internacionals d'Arqueologia Romana*. 311-319 Granollers

Ruiz Rodriguez A. et al. 1985, El poblamiento Ibérico en el alto Guadalquivir. *Iberos. Actas de las 1 Jornadas sobre el mundo Ibérico*, Jaen, 239-256

Ruiz Rodríguez A. and Molinos Molinos M. 1981, Poblamiento Ibérico de la campiña de Jaen. Análisis de una ordenación del territorio. *Primeras Jornadas de Metodología de Investigación Prehistórica de Soria*, 421-429

Sanmartí E. and Padró J. 1977, Ensayo de aproximación al fenómeno de la iberización en las comarcas meridionales de Cataluña. *Simposio Internacional: Els Orígens del Mon Ibèric, Ampurias* 38-40, 157-176

Sanmartí J. Santacana J. and Serra R. 1984, El Jaciment Ibèric de l'Argilera i el poblament protohistòric al Baix Penedès. *Quaderns de Treball* 6. Barcelona

Sanmartí E. Nolla J.M. and Aquilué X. 1983-1984, Les excavacions a l'àrea del parking al sud de la Neàpolis d'Empúries (Informe Preliminar). *Empúries* 45-46, 110-153

Serra Vilaró J. 1932, Excavaciones en Tarragona. *Memorias de la Junta Superior de Excavaciones y Antigüedades* 116 (1930 nr.5)

Serra Ràfols J. 1942, Excavaciones en Gerona. *Memorias de los Museos Arqueológicos Provinciales* 1941 II. Madrid

Serra Ràfols J. 1941, Las Termas Romanas de Caldas de Malavella. *Archivo Español de Arqueología*, 304-314

Solias J.M. 1983, Excavacions a l'ermita de Ntra. Sra. de Sales, Viladecans. *Excavacions Arqueològiques a Catalunya nr.3*. Departament de Cultura de la Generalitat de Catalunya

Tchemia A. 1971, Les amphores vinaires de Tarraconaise et leur exportation au début de l'Empire. *Archivo Español de Arqueología* 44, 38-85

Terré E. 1987, La Vil·la Romana de "El Moro": Un exemple de poblament rural al camp de Tarragona. *De les Estructures Indígenes a l'Organització Provincial Romana de la Hispania Citerior. Jornades Internacionals d'Arqueologia Romana*, 219-224

Tremoleda J. 1987, La Producció del Forn de Palamós (Baix Empordà). *El Vi a l'Antiguitat. Economia Producció i Comerç al Mediterrani Occidental. I. Col·loqui d'Arqueologia Romana*, 210-216, Badalona

Villaronga L. 1977, *The Aes Coinage of Emporion*. BAR Supplementary Series 23. Oxford

Villaronga L. 1979, *Numismática Antigua de Hispania. Iniciación a su Estudio*. Barcelona

Villaronga L. 1981, Evolució de les Monedes. *L'Avenç* 38, 42-48

Williams D. 1981, The Roman Amphora Trade with Late Iron Age Britain. *Production and Distribution: a ceramic viewpoint* (Eds. Howard H. and Morris E.), BAR International Series Nr. 120, 123-132

Wilson A.J.N. 1966, *Emigration from Italy in the Republican Age of Rome* Manchester Age Of Rome.

11. Romanization and Urban Development in Lusitania

by Jonathan C. Edmondson

Perhaps the most eloquent testimony to Roman rule over the provinces of the West is provided by the remains of the theatres, amphitheatres, circuses, temples, forums and aqueducts that still survive in many formerly Roman cities. These buildings, and the cities in which they stand, represent in physical terms the impact of Rome on the provincial landscape. In some cases it was the Roman conquerors who oversaw the creation and construction of these cities *ex nihilo*, while in many cases towns which had formed part of the settlement pattern of the late Iron Age received Roman settlers and/or status. Thus towns, and the monumentalization of towns, are a potentially revealing index to the spread of Romanization in a particular area of the Roman Empire. Towns must not, however, be seen in isolation; the success of a town depended upon the successful exploitation of the surrounding countryside, and the countryside in turn depended on the town as a focal point for social, economic, political and religious purposes. Thus a preference for an urbanized society, deriving its livelihood, wealth and prestige from settled agriculture carried on in the hinterland of the towns was central to Greco-Roman ideology (Finley 1977; Février and Leveau 1982).

The Greek geographer Strabo, writing under Augustus and Tiberius, represented Rome as bringing civilization to the barbarian Celtic world in these very terms. Strabo equates civilization with the adoption of a 'polis' system, so familiar to him from the heartland of Greco-Roman culture. Thus in his account of the Iberian peninsula in Book Three Strabo considered the agricultural fertility of Turdetania (roughly equivalent to the Roman province of Baetica) a major determining factor in the high degree of urbanization – and civilization – to be found there (3.2.15). Conversely, in the interior the Celtiberians, for example, are held not to lead a civilized life because their natural environment was unconducive to the development of towns (3.4.13). Indeed Strabo's whole account polarizes Roman Spain

into two very distinct regions, defined by their accessibility to the Mediterranean world: on the one hand, the southern and coastal area; on the other, the northern and the interior. The former was marked by towns, settled agriculture, a cereal-based diet, supplemented by wine and olive-oil (3.2.15; 3.4.16). Significantly, it was in contact and communication with the central Mediterranean, which led not only to flourishing maritime commerce (3.2.1; 3.2.4-6), but also to the introduction of Greco-Roman culture, which included the use of the Latin alphabet and language, and Roman dress (3.1.6; 3.4.20). On the other hand, the northern, interior zone was marked by a rugged terrain and inhospitable climate (3.1.2); this, as well as the indifference of the inhabitants (3.3.5), meant that cereals, vines and olives were not widely cultivated (3.3.7; 3.4.16). This exiguous economic base held back the development of towns and so allowed settlement only in villages (3.2.15) and a concomitant lack of the outward marks of culture: no coinage, some most outlandish languages and an equally outlandish mode of dress (3.3.7).¹ In short, the south and coastal zone represented for Strabo everything that was 'hemeron' (gentle, civilized), the north and interior the very opposite – 'dushemeron'; the former is blessed with peace, the latter with war, or at best 'brigandage' (3.3.8).

A recurring theme in Strabo's work as a whole is the antithesis between the 'civilized' pattern of an urban lifestyle combined with settled agriculture on the one hand and the 'barbarian' (or marginal) practice of a migratory, pastoralist existence on the other (Shaw 1982-83, 29-30). It is not surprising to find a classic formulation of this latter ethnographic pattern in Roman descriptions of the most famous Lusitanian opponent of Rome, Viriathus. Among others Livy outlines the stock character type succinctly:

"Viriathus in Spain first from being a shepherd became a hunter, then from a hunter became a brigand, and soon from a brigand became the leader of a veritable army also." (Livy, *Per.* 52)

It is the Romans in Strabo's account who most virulently opposed and eventually transformed native societies where pastoralism/brigandage prevailed. The case of the tribes living in the hinterland of Massilia (modern Marseilles) may be taken as typical:²

"Instead of brigandage they had already turned towards an urbanized life and settled farming because of Roman sovereignty over them." (4.15)

The major question, therefore, that I would like to pose here is the

extent to which Rome can be shown to have encouraged the processes of urbanization in the province of Lusitania, and whether there was any regional variation in the intensity of urbanization within the province. Although the 'polis' system of settlement was widespread from Scotland to the Sahara under the Roman Empire, and although there were many common features between towns of one region of the Empire and another, there were, nevertheless, significant local variations both in the intensity of urbanization, and in its nature (Drinkwater 1987). Urbanization can, therefore, be a useful index to the extent to which the various parts of the province were affected by Romanization.

Ideally this discussion of urbanization should form only part of a much more wide ranging discussion of Romanization in Lusitania. For this a consideration of the following topics would be crucial:

(a) rural development and the interaction between town and country. The highest concentration of Roman villa sites occurs in the hinterland of two Roman colonies of the province: the capital, Augusta Emerita (Gorges 1982 and 1986) and the centre of the judicial *conventus Pacensis*, Pax Iulia (Alarcão, Etienne and Mayet forthcoming). There have to date been few discoveries of villas in the Celtic interior north of the Tagus (Gorges 1979, 454-62, 467-71), where, as we shall see, a different pattern of nucleated rural settlement prevailed;

(b) the preservation of elements of indigenous social relationships – especially extended kinship groupings. Inscriptions suggest that Celtic patterns of kinship groupings survived into the second and third centuries AD – essentially in the north of the province (most dramatically in the modern provinces of Salamanca and Avila) (Albertos Firmat 1975 and 1981);

(c) the persistence of native languages. Although the urban bricklayers of Conimbriga scratched their graffiti in Latin (Fabre 1974), in more rural areas an Indo-European language (?Lusitanian) has survived on inscriptions and was presumably spoken (*CIL* II 415, 738, 739; Tovar 1966-67; in general Untermann 1980);

(d) the continued worship of indigenous deities. Again in the north of the province inscriptions reveal many native deities still being worshipped – especially in the countryside (d'Encarnação 1975); in the cities dedications to Roman deities predominate. Rural sanctuaries of native deities continued to operate under the Roman Empire: for example, the shrines to Endovellicus at São Miguel de Motes, Vila Viçosa (Vasconcelos 1905, 111-46; d'Encarnação 1984, 561-629, nos.

482-565; for new text *Ficheiro Epigráfico* 64 = AE 1985, 503) and at the Iron Age site of Candeleda (Avila) (Fernandez Gomez 1986, 882-905).

These 'negative' features, as it were, allow us to attempt a definition of the complex term 'Romanization'. 'Romanization' may be defined as a gradual change affecting provincial society, caused by the adoption (at least at an élite level) of the main strands of Roman practices of government, law, language, dress and culture. It does not imply a mere imitation of Roman customs and values, but rather a fusion of Roman and native elements to form a new and dynamic cultural identity. Although Roman and/or Italian soldiers, traders, administrators were important vehicles of cultural change, the main impetus came from the periphery (that is, from the provincial élite) rather than from the imperial capital. Romanization should not be seen as a cultural matrix imposed on a native society by Rome.³

The Physical and Human Geography of Lusitania

Ever since Nero sent Otho to be governor of the province (Tac. *Hist.* 1.21; cfr. 1.13), Lusitania has had something of a reputation as a backwater of the Empire. It suffers constantly from comparison with its neighbour, the highly Romanized, and exceptional, province of Baetica. In Pliny the Elder's list of Spanish towns of privileged status (*NH* 4.22.117), Lusitania can boast only a small fraction of the number of towns in Baetica. But this does not necessarily mean that Lusitania was a backwater throughout the Roman period. The source of Pliny's information may well be the map of the Roman Empire prepared for Agrippa; if so, his information may well be Augustan in date. As we shall see, it is only in the Augustan period that the foundations of urban development in Lusitania are laid. There were two important factors that affected the development of cities in Lusitania, as in other provinces of the western Empire: (a) the nature of the local environment and (b) the extent of Iron Age urban development. That is, local ecological and climatic conditions had to be favourable for successful agriculture, to provide the economic base for an urban community and, secondly, Roman towns are more likely to have flourished in areas that had already seen some form of urban development in the pre- Augustan period. It is the purpose of this section to assess briefly where the environmental and cultural conditions were conducive to urban development, and hence Romanization, in Lusitania.

The Physical Background

First, the physical background. The Iberian peninsula is renowned for the diversity of its physical conditions, and the area that comprised the province of Lusitania is no exception. For discussion, it will be convenient to divide the province into its three Roman administrative subdivisions: the *conventus Pacensis*, the *conventus Emeritensis* and the *conventus Scallabitanus* (Fig. 11.1).

(a) The Conventus Pacensis

Much of this *conventus* consists of an extensive plateau or tableland between two rivers, the Tagus and the Guadiana – now called the Alentejo. For the most part it is covered with tough *maquis* or scrub, which supports some olive groves and plantations of evergreen oak, especially the cork oak. Pigs are well suited to this environment and can often be seen foddering on the acorns. Two fertile zones for cereal culture occur around modern Beja and Evora, in medieval times two very important wheat producing areas of Portugal (Oliveira Marques 1978, 77-80). Beja (the Roman colony of Pax Iulia) is surrounded by a high density of Roman villas, which suggests that this was an agriculturally fertile region also in the Roman period (Gorges 1979, 471-477; Alarcão, Etienne and Mayet forthcoming). The territory of Evora (the Roman *municipium* of Ebora) has so far revealed fewer traces of Roman rural settlement, but this is one area of the province in which Lusitanian senators are known to have owned land (Etienne 1982). The southerly part of the plateau is crossed by the important Iberian Pyrites Belt and many Roman copper and silver mines are known from the area, including the major mine of Vipasca (Aljustrel) (Edmondson 1987, 25-99, 208-221). The coastal strip, the Algarve, although narrow, is relatively fertile, especially now for fruit crops, and has easy access to the sea, which led to the development of many fish-processing centres along the coast for the production of *garum*, *liquamen* and other fish-sauces (Edmondson 1987, 100-198, 255-269 and Edmondson forthcoming a).

(b) The Conventus Emeritensis

This *conventus* covered much of Extremadura, one of the most desolate areas of Spain. But there are pockets of fertility: most notably, the Tierra de Barros, which formed part of the territory of the provincial capital, Augusta Emerita, and which has revealed traces of Roman centuriation (Rodriguez Diaz 1986; Gorges 1982; Sillières 1982). Conditions are also reasonably favourable in the Tagus valley around

Caesarobriga (modern Taíavera de la Reina) and in the valley of the Tormes around Salmantica (modern Salamanca). But although soil conditions may be promising, the climate is less so, consisting of “tres meses de invierno, nueve de infierno” (“three months of winter and nine of Hell”) according to a local proverb of Extremadura. Apart from these areas the tableland between the Guadiana and the Tagus consists of mainly rocky soils which can support little but heathland, while to the north of the Tagus rise the central Sierras (the Sierra de Gredos, de Gata and de Francia), areas of the peninsula remote and for much of their history cut off from the civilizations based in the plain. The terrain levels out again into the Castilian plateau either side of the river Duero.

Much then of this *conventus* could support little productive agriculture; stock-raising has always been more dominant: in the Middle Ages there was widespread, state- controlled transhumance between the upland, summer pastures of the sierras and the lowland, winter pastures in the plains (Klein 1920).

(c) The Conventus Scallabitanus

The central Meseta does not extend this far west, and so the landscape of this *conventus* is much more fragmented, cut east-west by a series of river valleys and intervening mountain ranges. However, favourable conditions prevail in the fluvial plain of the Tagus between Olisipo (modern Lisbon) and Scallabis (modern Santarém) for agriculture, as well as for vines and olives; in the Middle Ages this area was known as the ‘granary’ of Portugal (Oliveira Marques 1978, 72-77). In the valleys of the Mondego and Vouga agriculture is practised along terraces and is favoured by the more temperate Atlantic climate. Furthermore, many of these river valleys were also rich in metals and many Roman mining sites have been located. However, in the interior the higher ground provides little prospect of successful agriculture, but does contain some Roman gold and tin mines (Edmondson 1987, 231-243). Even now these regions support very low densities of settlement.

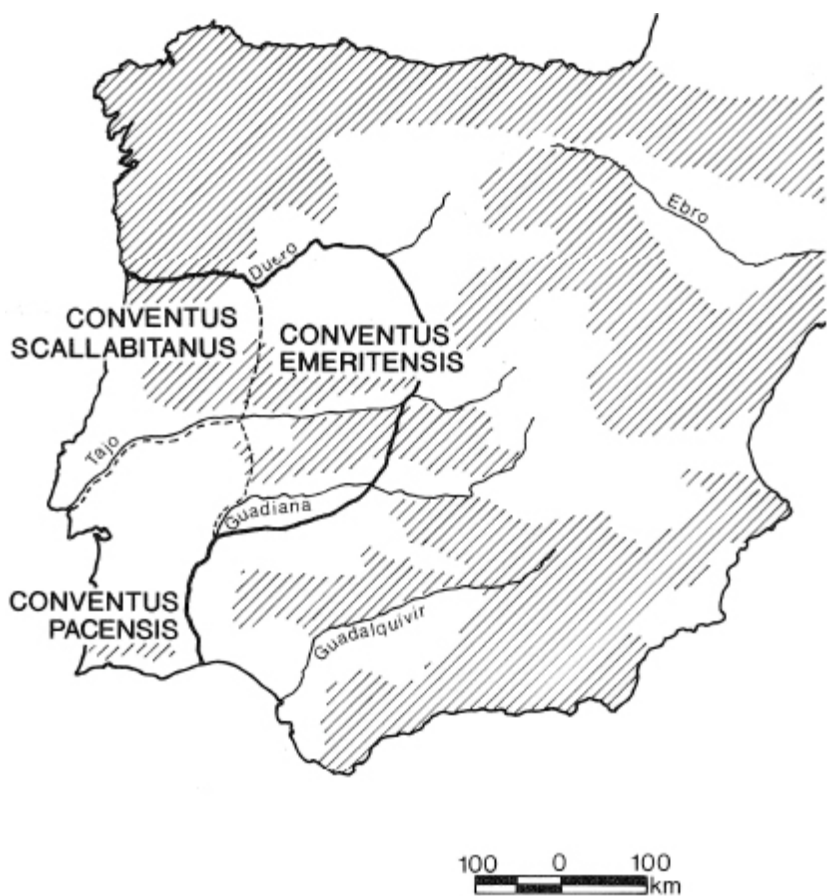


Fig. 11.1 Map of the Iberian Peninsula, showing the terrain, the limits of Lusitania and the Conventus boundaries.

Cities then required favourable agricultural conditions to flourish, and these are only forthcoming in certain areas, notably in the river valleys with their richer alluvial soils. The open plateaux, with their poor soils and harsh climate, or still more the more mountainous zones could not support large cities. Furthermore, mountainous areas would have presented problems of communication between urban centre and rural hinterland; thus the classical Roman settlement pattern was not suited to this environment.

The Human Background

Rome was faced not only with a mosaic of differing physical regions when she came to organize the province, but also with very differing degrees of indigenous urbanization. (Fig. 11.2) Furthermore, Roman penetration came only in stages, which in turn led to further regional

imbalance in cultural development. Ethnically the province was composed of a variety of peoples (Alarcão 1983, 17-21). The Algarve and southern Alentejo had been inhabited by the Conii, or Cynetes, who had developed not only proto-urbanized communities (e.g. Conistorgis), but also their own alphabet and script, before they were overwhelmed by Celtic invaders from the central Spanish Meseta in the fifth or fourth century BC (Almagro Basch 1966, 210-11; Coelho 1971). These Celts came to occupy the whole of the Alentejo; they settled in characteristic hill-forts (or 'castros'), and introduced a distinctive form of pottery akin to that found in Celtiberian settlements of the central Meseta (Maia 1980; Arnaud and Gamito 1974-77). But in this zone there were also immigrants from Turdetania (part of Roman Baetica), Turduli, who, by contrast, established communities that may be described as 'proto-urban' at, for example, Balsa (Tavira), Ossonoba (Faro), Myrtilis (Mértola), Pax Iulia (Beja), Salacia (Alcácer do Sal) and Caetobriga (Setúbal) (Maia 1980). Some of these communities had minted their own copper coinage in the pre-Augustan period, a mark of their relatively advanced society (Vives 1924, 81 (Baesuris), 114 (Ossonoba), 85 (Silves), 24-27 (Salacia), 90-91 (Myrtilis)). Strabo comments (3.2.15) that the Celtici were influenced in Hellenistic ways by the proximity of the Turduli, but crucially were not persuaded to adopt an urbanized way of life.

The area to the north of the Tagus in modern Portugal was occupied by the Lusitani, probably a generic term covering a multiplicity of smaller peoples (*populi*), who also settled in hill-top enclosures, each one forming the central place for a kinship grouping. The river valleys and coastal areas, however, being more open to cultural influences from outside, saw a greater development of proto-urban communities in the pre-Augustan age: for example, Talabriga (? Marnel), Aeminium (Coimbra), Conimbriga (Condeixa-a-Velha), Collippo (S. Sebastião do Freixo), Eburobrittium (Amoreira de Obidos) and Olisipo (Lisbon). On a smaller scale, the Iron Age settlement at Olaia (near Figueira da Foz: [Fig. 11.3](#)) has revealed signs of a primitive kind of proto-urban layout, as well as imported Phoenico-Punic glass and ceramics (dos Santos Rocha 1905-08). Similarly Greek and Punic artefacts have been found in some abundance at Salacia (Alcácer do Sal) on the Sado, the major entrepot for the exchange of metals for imported goods (Tavares da Silva et al. 1980-81). But such contact with Greeks or Phoenico-Punic traders (whose origin was probably the Phoenician colonies in southern Spain rather than Phoenicia proper) was not totally restricted to coastal regions (Harrison 1988). Occasionally finds have also been made well in the interior: for example, at Medellin (Badajoz)

(Almagro Gorbea 1970) or at hill-forts at Botija or Berzocana (both in Cáceres: [Fig. 11.3](#)) (Soria Sanchez 1985, 490). The explanation for this presumably lies in the significant mineral wealth of the interior. Phoenico-Punic traders sailed up the Atlantic coast to exchange their luxury goods for such metals extracted by native labour. Some of these goods found their way inland and served as prestige items for the native élites in their local centres of power.

The land north of the Tagus in Spain was occupied by the Vettones, whose material culture was essentially Celtic and who also settled in hill-forts: for example, Las Cogotas, Cardenosa (Avila: [Fig. 11.3](#)) (Cabré Aguilo 1930 and 1932). Again 'Vettones' is probably a generic term, possibly invented by their Roman conquerors. Their territory is neatly defined by the distribution of zoomorphic sculptures of pigs, wild boars and sheep (Roldán Hervas 1968-69; Lopez Monteagudo 1982; Salinas de Frias 1986).

There was, therefore, in broad terms a distinct contrast between the Celticized interior of the province, marked by a 'castro culture' and those regions more accessible to external influences from more developed societies. It is no coincidence that all the communities of Lusitania that received municipal status in the Augustan organization of the province (Ebora, Myrtilis, Olisipo and Salacia) had their origins as proto-urban settlements in the later Iron Age under the influence of immigrant peoples and cultural ideas (Plin. *NH* 4.22.117; with Galsterer 1971).

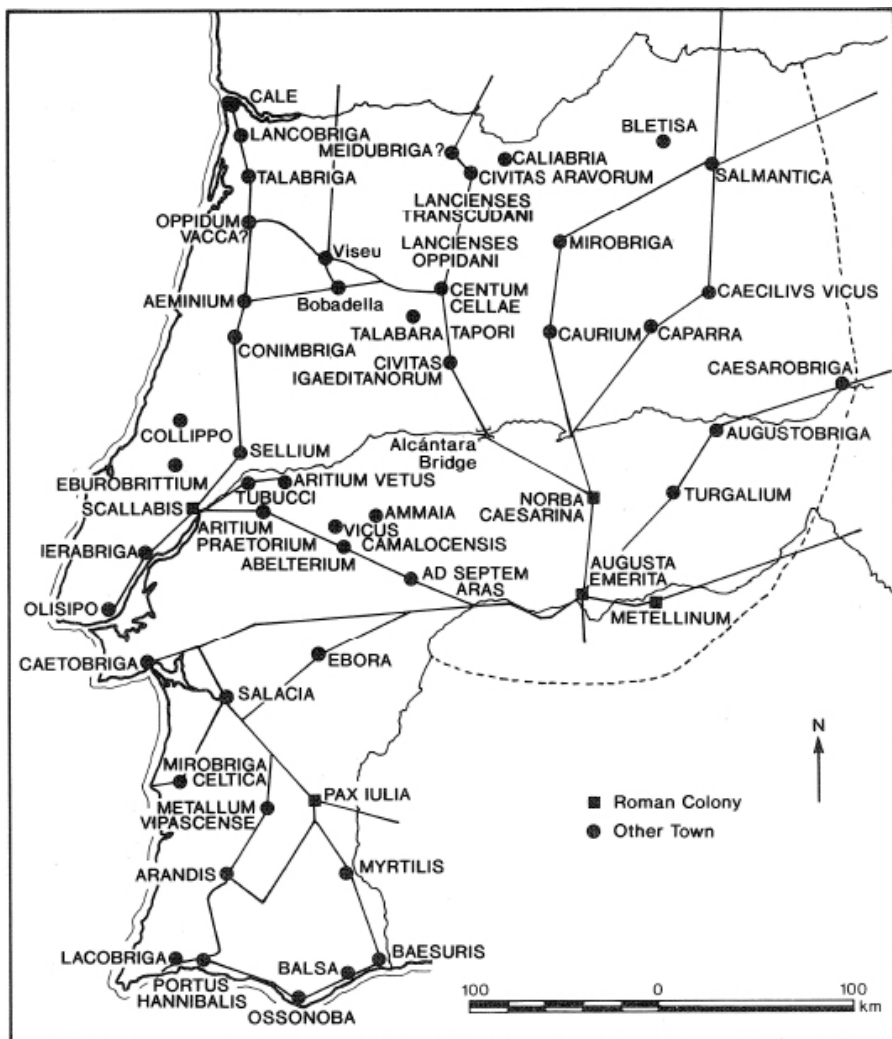


Fig. 11.2 Towns and Roads of Lusitania.

Hill Forts and Iron-Age Proto-Urbanization

A rough guide to the spread of Iron Age hill-forts is shown in Fig. 11.4. Few of these sites have been excavated thoroughly, while intensive field-survey would undoubtedly reveal many more. These hill-forts can hardly be described as 'cities' and Strabo (3.4.13) is right to criticize Polybius for claiming that Ti. Sempronius Gracchus destroyed 300 Celtiberian 'cities'; historians and generals, he reports, often made this false claim, to enhance the general's chance of a triumph. But there is growing archaeological evidence to suggest that they represent an essential first phase of 'proto-urbanization'. It might be thought that these 'castros' were merely places of refuge for use in

times of military insecurity. But what is becoming clear is that there was a definite hierarchy of settlements; some of the larger 'castros' had much more permanent economic, religious and political functions, as suggested by their extra-mural burial grounds, stone-built houses, religious sanctuaries and mill-stones for rotary grain mills (as well as carbonized cereal seeds).⁴ Even occasionally there is trace of social stratification within the hill-fort: so at Serra da Segovia, near Elvas there was clear differentiation in the style of buildings (Gamito 1982); or at Berzocana (Cáceres) the collections of precious jewellery must have served as status symbols for members of the indigenous élite (Soria Sanchez 1985).

Although isolated finds of Phoenico-Punic or Greek pottery have already been noted, more significant are the cultural ideas that these Mediterranean peoples may have transmitted to this Celtic area. Acculturation is visible in two distinct spheres: (a) religion and (b) urban layout. First, the metaphysical: cult and religious practice. A large votive deposit has recently been excavated at Garvão, Ourique (in the territory of the Celtici); native incised wares of the fourth century BC were found alongside Attic finewares, Punic glassware, two representations of the Punic deity Tanit and various silvered and gilt discs representing eyes. These discs suggest that the hoard was deposited as part of rituals associated with a local healing god, akin to the Greco-Roman Aesculapius (Mello Beirão et al., 1985).⁵ Furthermore, the whole ritual practice of 'bothros' (or ritual depositing of cult objects) is familiar from Greco-Roman chthonic cults (Burkert 1985, 199-200).

But more dramatic are two sanctuary sites dated to the later Iron Age. First, the large, mud-brick complex at Cancho Roano, near Zalamea de la Serena (Badajoz). Alongside Iberian banded and painted wares, hundreds of Attic black-glazed pots have been discovered, which would suggest contact with the East Mediterranean world. Furthermore, the style of the building is reminiscent of buildings from the Greek site at Al-Mina on the Orontes. Its exact function is, however, extremely controversial: it has been interpreted as a large ash-altar (Blanco Freijeiro 1981), or, more plausibly, a sanctuary, possibly of the indigenous goddess Ataecina, which was later reused as a cremation site for the Lusitanian élite (Maluquer de Motes 1983; cf. Harrison 1988, 132-4). What is clear that this imposing structure must have made a striking impact on the local landscape and the local society. In its scale and in its two distinctive, successive phases and functions of operation, it bears some similarities with the Toumba complex at Lefkandi (Euboea). Might Cancho Roano not then have

been the residence of a local aristocrat, on whose death the house was transformed into a cult place for the dead hero ? In other words, the monument may attest the introduction of not only Greek pottery, but also the Greek custom of hero-cult into this region (see Harrison 1988, 113-21 for some Iberian parallels). Secondly, an Iron Age temple has been discovered at the Celtic hill-fort at Santiago do Cacém, which was later developed into the Roman *municipium* of Mirobriga Celtica, its name preserving trace of its native origin. The form of the temple is hybrid: it had a Hellenized *pronaos* and *cella*, but was squarish in shape in the Celtic tradition (Slade et al. 1983, 56-58). Its cultic importance is stressed by the fact that it was not destroyed when the forum of the *municipium* was being laid out; rather, it was integrated into the monumental centre and flanked by two Roman temples.

The second sphere of acculturation is more physical, i.e., urban layout. Houses of rectangular plan appear with some frequency in 'castros' of the second and first centuries BC. This style of building would again seem to owe its origin to cultural ideas introduced from the East Mediterranean world; significantly, it does not occur north of the river Vouga, where houses of circular plan (for example, at Romariz, Feira: de Almeida 1975, 492) mark the 'castros' in this region as being much more akin to the cultural world of Galicia (on which Tranoy 1981; Pereira Menaut 1984). But even more eloquent testimony to cultural development than just the appearance of houses of rectangular plan is the occasional organization of these houses into something approaching an urban layout. So at the Vettonian site of Berzocana (Cáceres) rectangular houses were arranged in parallel streets (Soria Sanchez 1985, 490); while at Lusitanian Conimbriga a primitive form of grid system was laid down in the later Iron Age: the two main streets intersected at an angle of 75 degrees, thus grouping the houses into trapezoidal *insulae* (Alarcão and Etienne 1977, 17-25).

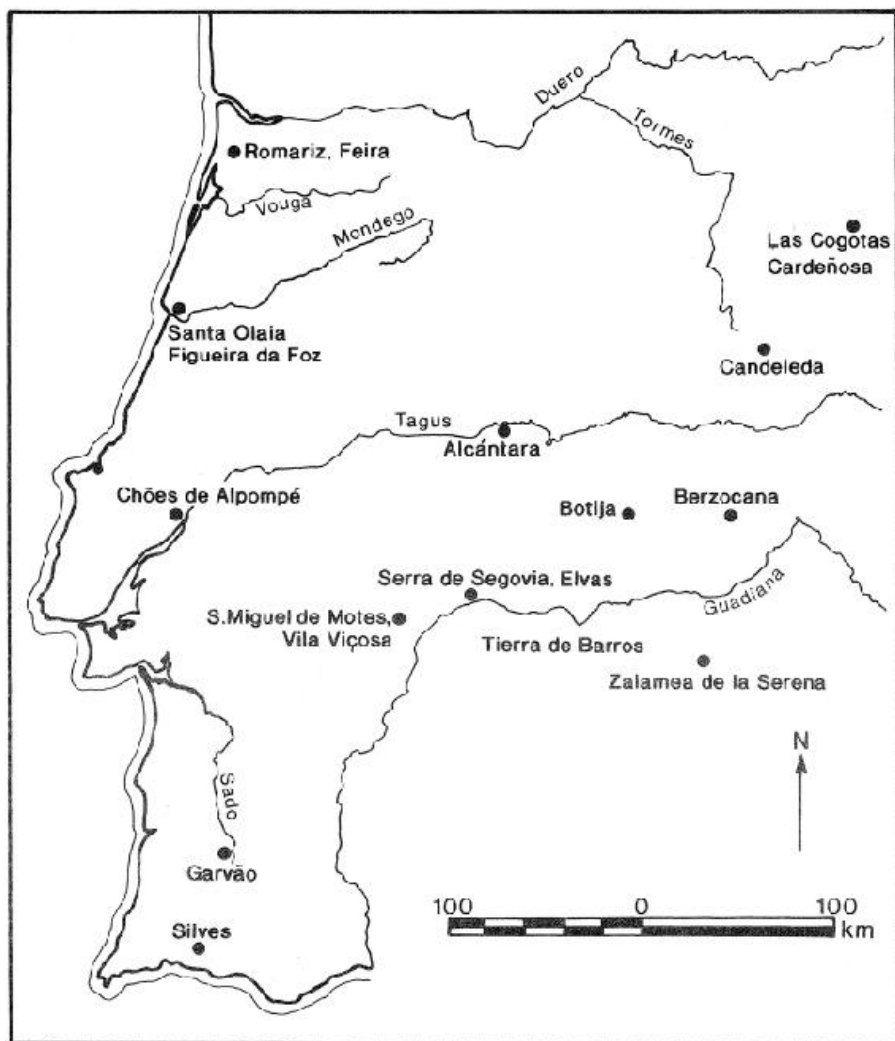


Fig. 11.3 Map showing the smaller sites discussed.

But perhaps the most revealing of all recent archaeological discoveries for the development of urban structures is the bronze surrender pact dated precisely to 104 BC found in a (?Vettonian) hill-fort at Villavieja, near Alcántara (Meleno, Sanchez Abal et al, 1984; AE 1984, 495; Richardson 1986, 199-201). It records the surrender of a *populus* to the Roman general L. Caesius; the Romans agree to return intact to the *populus* their “buildings, their laws and everything else that was theirs on the day before the surrender”. At first sight it might appear that here is a native community that had already acquired a permanent centre, with (? public) buildings and had developed some

kind of legal code. But those senatorial decrees concerning settlements after Roman victories in the Greek East (e.g. the decree re. Thisbae of 170 BC: *FIRA* I 31, esp. 11. 25-31; or decree re. Koroneia of 171/70 BC: *SEG* XIX 374; and cf. Polybius 36.4.1-3) show that the Alcántara text may merely be reproducing a standard Roman administrative formula and thus does not necessarily provide distinctive information about its local context. However, the arrival of the Romans in the area and the imposition of such regulations, couched in Roman terms, helped to introduce more advanced cultural ideas. Native *legati* are mentioned in our document, which suggests the existence, or imposition by the Romans, of some form of political hierarchy. It is unclear if the entire *populus* resided within the walls of the 'castro' at Villavieja, or whether Villavieja was established as the 'chief-place' of the *populus* with more dispersed settlement throughout its territory; for there were other smaller 'castros' in the neighbourhood (Meleno et al. 1984, 308-310), perhaps subordinated politically to Villavieja. Finally, the engraving and display of the bronze plaque in the civic centre of the *populus* suggests at least that the familiar Greco-Roman practice of the setting up of inscriptions in the civic centre was being transmitted to this part of the Celtic world (see further Edmondson forthcoming b).

Thus, such archaeological data suggest that there had been some cultural development even in interior, Celticised parts of the later Roman province of Lusitania in the pre-Augustan period. They lead one to reject as unreliable Strabo's picture of a barbarian world that only received civilization (which to Strabo was essentially urbanocentric) at the hands of Rome. Cultural influences from the eastern Mediterranean had reached the area well before the Romans.

The Contribution of Augustus

The province of Lusitania was created when Augustus divided the Republican *provincia* of Hispania Ulterior into Baetica and Lusitania at an uncertain date (Albertini 1932; cf. *Cambridge Ancient History* X 345). One of Augustus' first concerns was to hold a provincial census throughout the Empire (*RG* 8.2). The efficient way to conduct such a project was by dealing with city + territory units (*civitates*); the local magistrates were then responsible for their own *civitates* (Brunt 1981). There is no doubt that a provincial census was held in Lusitania under Augustus, since an inscription preserves the name of an equestrian official sent to the province 'pro censore' (*CIL* X 680). It, therefore, follows that some attention must already have been paid to the internal subdivision of the province into city + territory units. Few

problems existed in the *conventus Pacensis*, for example, where cities with fixed territories had already developed in the pre-imperial period. But in other parts of the province substantial efforts had still to be made. The first step was to ensure that endemic brigandage was stopped and the *pax romana* established. The Romans then had to ensure that the peoples that made up the province were settled within fixed limits, with an urban centre established as the focal point for administrative purposes. As far as possible, the Romans would have been keen to use already existing tribal boundaries, but more commonly had to divide the peoples into *civitates* and define their territories more clearly than had previously been the case. The efforts of the early provincial governors can in part be gauged from those inscribed boundary markers (*termini Augustales*) that have survived (Fig. 11.5). Most of them can be dated to AD 4-6, although the example from Goujoim, Armamar (Viseu) dates either to AD 46-7 or to AD 59, depending on which emperor's name is restored to the text (Vaz 1979). This shows that the settlement of all such boundaries was not necessarily effected immediately; there was certainly an initial phase of organization under Augustus, but further action or modification was necessary well into the first century AD. It would be surprising if there were no disputes between neighbouring peoples over these boundaries and this later marker may well reflect the settlement of a controversy. However, in all cases it was the responsibility of the provincial governor to arrange the limits of each *civitas*. The geographical spread is shown in Fig. 11.5. With the exception of the three markers relating to the territory of Augusta Emerita,⁶ all have been found north of the Tagus in Vettonian or Lusitanian territory, i.e., in areas where pastoralism had been the dominant element in the local economy in the Iron Age. Here cities with clearly defined territories had not been the rule. The lack of finds of such markers in more urbanized areas seems not to be coincidental.

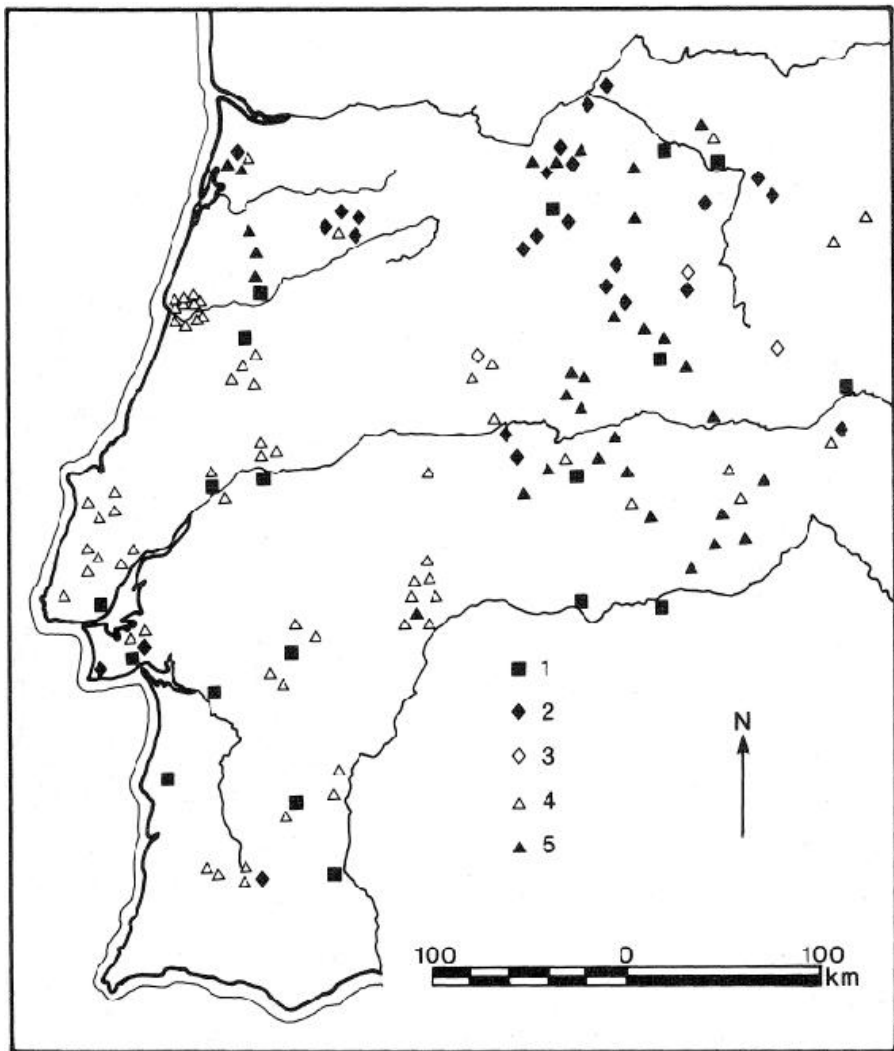


Fig. 11.4 Map showing the hill-forts of Lusitania.

Legend: 1. site that developed into colonia or municipium; 2. site that continued as a vicus under the Roman Empire; 3. site shifted to form a Roman settlement; 4. site abandoned with no Roman occupation; 5. site without information about abandonment or continuity.

For the creation of new urban centres the Romans preferred to promote an already existing proto-urbanized settlement to be the capital of the *civitas*; thus, Mediolanum in Cisalpine Gaul was developed from being a mere village to be the *civitas* capital of the Insubres (Strabo 5.1.6), while Vienna in Transalpine Gaul became the capital of the Allobroges (Strabo 4.1.11). If I was correct to argue that some *populi* in Lusitania had already developed central places, then

much of the groundwork had already been done. Together with the promotion of an existing settlement, the Romans seem also to have allowed the tribal aristocracy of the original settlement to remain as the élite of the new urban centre. Thus the local aristocracy would be willing to support the interests of Rome to ensure that they maintained their dominant positions within their local societies (see Goudineau 1979, 308 for the same process in southern Gaul).

Just as Cn. Iulius Agricola as governor of Roman Britain was seen by Tacitus to “privately encourage and publicly assist” the processes of urbanization in Britain (Tac. Agr. 21), so the provincial governors of Lusitania would have given similar encouragement and assistance. The town of Idanha-a-Velha (Roman name unknown) was set up as the *civitas* capital of the Igaeditani. The earliest phase of its urbanization can be dated to the Augustan period (de Almeida 1977, 41). Furthermore, a sun-dial was donated to the community in 16 BC by a citizen of the provincial capital, Augusta Emerita (AE 1967, 144). The provincial capital would have been especially important in providing the lead and encouraging urbanization in native communities, a point to which we shall return. The names of the *magistri* of the Igaeditani reflect the heavily Celticised nature of the local society: Toutonus Arci f., Malgeinus Manli f., Celtus Arantoni f. and Amminus Ati f.. The presence of magistrates at this early date again illustrates that Rome had to provide political models for the *civitas* capitals to adopt. Furthermore, the Roman provincial governor needed to operate through the local élite and so political structures had to be established immediately in such new communities. The establishment of the urban centre should be viewed in the wider regional context: it was accompanied by the fixing of boundaries between the Igaeditani and the Lancienses in AD 4-5 (cf. AE 1976, 273) and the construction of the road which linked the town with Norba Caesarina (modern Cáceres), a Roman colony, and thence the provincial capital, Emerita.

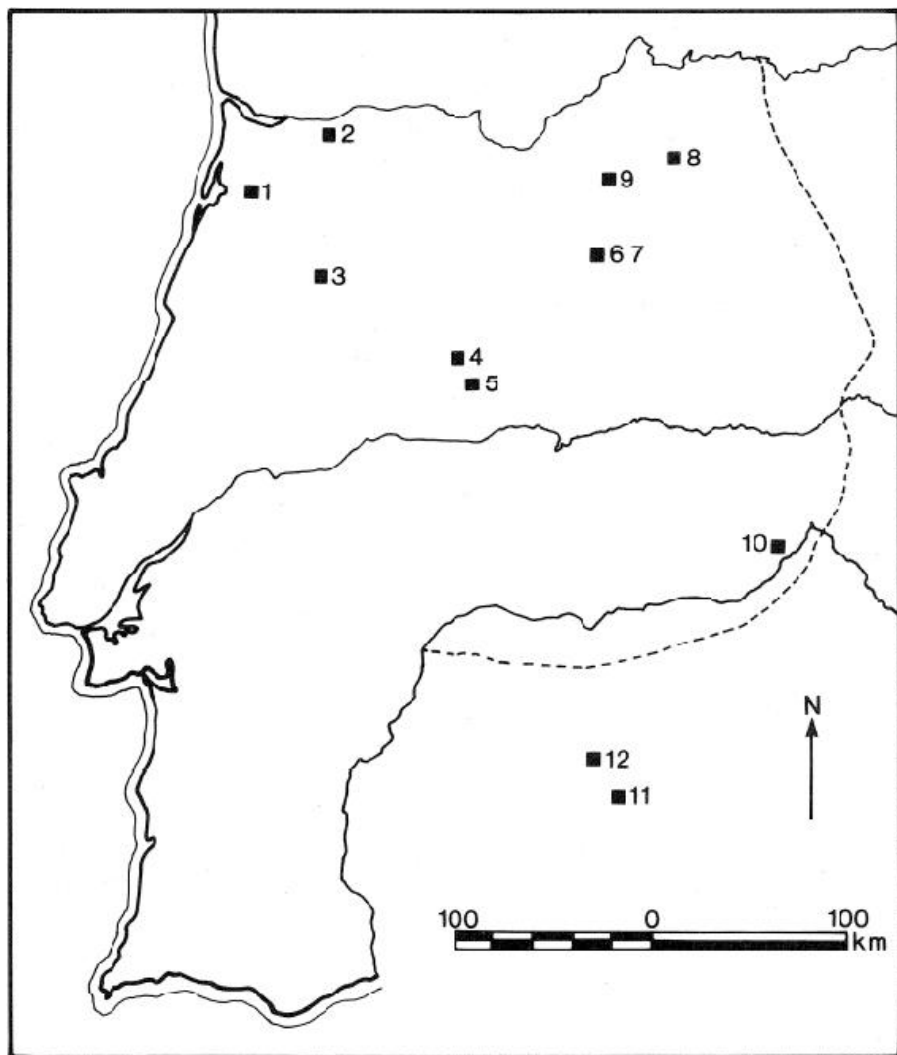


Fig. 11.5 Map showing the geographical spread of Termini Augustales in Lusitania. For sites see [Table 11.1](#)

Abandonment and Continuity of Iron Age Settlements under Roman Rule

The Roman habit of resettling hostile mountain-dwellers on flatter ground is a leitmotif of the ancient accounts of Roman expansion, first, within Italy and, later, throughout the Mediterranean world (e.g. Polyb. 1.65, Liv. *Per.* 19). As for Lusitania, Strabo (3.1.6) talks of mountain-dwellers being transplanted by the Romans from their lairs

in the north of the province to the Tagus-Anas mesopotamia, while Cassius Dio claims (37.52.3-4) that the professed reason for Caesar's campaigns of 61 BC against the inhabitants of the Mons Herminius (the Serra da Estrêla) was to resettle them on lower ground. He talks of 'cities' being abandoned to Caesar, but must mean hill-top settlements. Such literary anecdotes have led scholars to make some rather sweeping statements: for example, that "the native population was displaced very frequently under Roman rule" (Blázquez 1975, 26). However, a consideration of the archaeological material provides a substantial corrective, since it demonstrates that the Iron Age hill-top sites experienced a variety of different fates under the Roman Empire. Some were abandoned, but many continued to function as rural *vici*, while some were even developed into *civitas* capitals, *municipia* or Roman *coloniae*.

No.	Location	Date (AD)	Tribes	Reference
1.	Oliveira de Azemeis, Arouca	4-5	? Talabrigenses ? Lancienses	<i>HAEp</i> 1442; <i>AP</i> , 1953, 209
2.	Goujoim, Armamar	46-7 or 59	Coilarni ? Arabrigenses	<i>Conimbriga</i> , 1979, 135-158
3.	Guardão-Caramulo, Tondela	4-5	[...]ienses	<i>AE</i> 1954, 88
4.	Peroviseu, Fundão	4-5	Lancienses Igaeditani	<i>AE</i> 1976, 273 <i>Conimbriga</i> , 1977, 27-8
5.	Monsanto Valverde, near Idanha	5-6	Lancienses Oppidani Igaeditani	<i>CIL</i> II 460
6.	MIROBRIGA	5-6	Salmanticenses Mirobrigenses	<i>CIL</i> II 857
7.	MIROBRIGA	5-6	Mirobrigenses Bletisenses	<i>CIL</i> II 858
8.	Ledesma	6	Bletisenses Mirobrigenses Salmanticenses	<i>CIL</i> II 859
9.	Traguntia, Virlanga, SE of Yecla de Yeltes	6	[Mi]robrigenses [...]polibedenses	<i>CIL</i> II 5033
10.	Valdecaballeros	?	pratores col. Aug. Emer.	<i>BRAH</i> 1918, 152
11.	Montemolin	Domitian	Ucubi Augusta Emerita	<i>CIL</i> II 656
12.	Valencia del Ventosa	?		Alvárez Martínez 1986, 105

Table 11.1 The geographical spread of Termini Augustales

Roman name	modern	reference
(a) AUGUSTAN <i>MUNICIPIL</i> (cf. PLIN. <i>NH</i> 4.22.117)		
1. EBORA LIBERALITAS IULIA	Évora	García y Bellido 1971, 87
2. MYRTILIS	Mértola	Alves 1956, 41-45
3. SALACIA URBS	Alcácer do Shalal.	Tavares da Silva <i>et al</i>

IMPERATORIA		1980-81, 181-7
4. OLISIPO FELICITAS IULIA	Lisbon	Vieira da Silva 1944, 40-41
(b) ROMAN COLONIES (cf. PLIN. <i>NH</i> 4.22.117)		
1. AUGUSTA EMERITA	Mérida	Alvárez Martinez 1984
2. METELLINUM	Medellín	Almagro Gorbea 1971
3. NORBA CAESARINA	Cáceres	Callejo Serrano 1968, 121
4. PAX IULIA	Beja	Ribeiro 1960
5. SCALLABIS	Santarém	Arruda & Catarino 1982;
PRAESIDIUM IULIUM		Arruda 1983-84

Table 11.2 Iron Age sites in Lusitania which developed into Augustan Municipia and Roman Colonies

First, Roman colonies and Augustan *municipia* in Lusitania. By definition, the four towns that were granted municipal status under Augustus must have all been flourishing urban centres in the first century BC and this is indeed confirmed by archaeological evidence (see [Table 11.2a](#)). More interestingly, all five Roman colonies were also founded on sites that had already seen some settlement in the later Iron Age (see [Table 11.2b](#)). However, with the exception of Metellinum they seem not to have undergone substantial urban development before the establishment of the Roman colonies. The published evidence for Iron Age settlement at these cities is cited in [Table 11.2](#).

Secondly, many native settlements had not developed to a sufficient extent by the Augustan period to warrant municipal status, but they had been promoted to be the urban centres of the new *civitates* for the purposes of the Roman administration of the province. Some of these were granted municipal status under the Flavians (Galsterer 1971). The archaeological evidence for their occupation in the later Iron Age is set out in [Table 11.3](#).

Roman name	modern	reference
(a) Conventus Emeritensis		
MIROBRIGA	Ciudad Rodrigo	Martín Vails 1976, 373
CAESAROBRIGA	Talavera de la Reina	Jiménez de Gregorio 1952, 157; Alföldy 1987, 58-9
CAPERA	Ventas de Capara	Beltrán Lloris 1973, 3
BLETISA	Las Merchanas, Lumbrales	Maluquer de Motes 1956, 74-87
(b) Conventus Pacensis		
OSSONoba	Faro	cf. Strabo 3.2.5
BALSA	Tavira	cf. lead coins from first century B.C.: Casariego <i>et al.</i> 1987, 79, 121-2

MIROBRIGA CELTICA	Santiago do Cacém	Slade <i>et al.</i> 1983, 54-9
? CAETOBRIGA	Setúbal	Soares & Tavares da Silva 1986
(c) Conventus Scallabitanus		
SELLIUM	Tomar	da Ponte 1985a; 1985b
CONIMBRIGA	Condeixa-a-Velha	Alarcão & Étienne 1977, 17-25
AEMINIUM	Coimbra	Alarcão 1979

Table 11.3 Iron Age sites granted municipal status under the Flavians

Thirdly, many Iron Age hill-forts failed to develop into fully urbanised communities, but continued to function as smaller centres – most often as rural *vici*. Two areas illustrate this particularly. First, the modern Portuguese *distrito* of Viseu, a mountainous zone and one of scant Romanization: very few Roman villas sites have to date been discovered here (for example, the villa at Quinta do Costa, Chãs de Tavares, Mangualde: *Informação Arqueológica* 5 (1982-83), 144-45), but many hill-forts continued in existence under the Roman Empire.⁷ Secondly, the Spanish province of Salamanca, where urban centres only developed along the major Emerita to Asturica road, with some villas appearing in the later Empire (Gorges 1979, 344-46; Pinel 1981). Off this route, no villas are found and inscriptions reveal the scant adoption of Roman names and the widespread survival of native extended kinship groupings and native deities (Maluquer de Motes 1956, *passim*).⁸

However, exact continuity in the nucleus of the settlement was not always the rule; in some areas there were slight shifts to lower ground. Cerro de Berrueco, Béjar provides a good example: the Iron Age nucleus was situated in the foothills of the Sierra de Gredos; at the end of the first century BC a shift to lower ground took place, with settlement thereafter at two distinct nuclei (El Tejado and Los Tejares) (Cesar Moran 1924-25, 22-24; Maluquer de Motes 1956, 117). Similarly at Salmantica the Roman town was developed in the vicinity of, but not on the exact site of the Iron Age hill-fort (Maluquer de Motes 1951, 72). Again, some hill-forts were abandoned as settlements, but continued in use as religious sanctuaries: for example, El Raso de Candeleda, Avila, where the main settlement and its connected cemetery were abandoned at the end of the first century BC for a new settlement at Candeleda itself on the left bank of the Tiétar, but a connected sanctuary to Endovellicus continued to function under the Roman Empire (Fernandez Gomez 1986, 882-905).

This evidence for whole or partial continuity should not obscure the fact that in some cases the Iron Age hill-forts were abandoned – often,

it seems, during Roman military activity in the region, as, for example, at Las Cogotas, Cardeñosa (Avila), abandoned in the early second century BC (Cabr  Aguilo 1930 and 1932). However, many hill-forts were abandoned not as a result of Roman military action, but on the initiative of the native population itself. The Lisbon peninsula, for example, had been an area of fairly intense hill-top settlement in the Bronze Age and early Iron Age, but none of these sites remained in occupation into the Roman period. The reasons for this change may well be connected with the lack of warfare in the area and the increased contact with Phoenicians, Carthaginians and Romans. The eventual presence of the Roman army and their use of Olisipo (Lisbon) and Moron (possibly Ch es de Alpomp : Kalb and H ck 1984) as bases (Strabo 3.3.1) will have encouraged the intensification of settled agriculture, since the Roman army constituted a ready market for local food supplies. The natives will then have preferred to locate themselves closer to this new Roman military market.

The evidence from Lusitania, therefore, does not suggest that the abandonment of, or the shifts in the main nucleus of, hill-top settlements should be explained merely as a result of Roman military activity. The hill-fort at Villavieja, Alc ntara, where the surrender document of the local *populus* to the Roman army in 104 BC was inscribed and set up in its civic centre, (see above, p. 160), clearly remained in occupation long after its surrender to Rome, as the coins (of Augustus, Tiberius, Trajan, Constantine and Theodosius) found here also suggest (Meleno et al. 1984, 315-323). Perhaps a key to explaining the cases where Iron Age settlements were abandoned, or shifted, is provided by an inscription from Sabora in Baetica (*CIL* II 1433 = *ILS* 6092). The people of Sabora made a special request of the emperor Vespasian in AD 78 to be allowed to move their *oppidum* down from its hill-top location to the plain below. From the emperor's reply it is clear that the move was desirable, if not essential, on economic, not political grounds. The siting of their *oppidum* on high ground had led to great economic difficulties, perhaps caused by a combination of unsatisfactory agrarian conditions in the vicinity of their settlement and inaccessibility to the Roman road network and hence other urban centres in the region and especially their markets. The occupants of Lusitanian hill-forts may similarly have desired to locate themselves in closer proximity to the roads and towns of the Roman province and so abandoned their hill-forts of their own accord. It would seem unwarranted and over-generalised to say that all such changes in settlement in Lusitania were effected as a result of Roman military actions and for Roman administrative convenience.

Monumentalization and Urban Development

We have been taught, from Tacitus onwards, to see public monuments as the principal criterion of urban development in the Roman Empire (Tac. *Agr.* 21). The evidence for the nature of the monumental centres of Lusitania is not abundant, but is increasing all the time as a result of excavation and topographical detective work. For, first, urban centres were much fewer in number than in Baetica; and, secondly, most of the Roman towns of Lusitania have remained in occupation, thus removing much of the evidence for their Roman centres. In addition, relatively few building inscriptions are to hand from the province. But what is clear from the available evidence is that Roman-style buildings were erected even in towns located in remoter parts of the province. Thus Bobadella (to the north of the Serra da Estrêla) had a monumental centre with a forum equipped with entrance arches, an amphitheatre, a temple of Neptune and one dedicated to the ‘Genius Municipi’ (Maia do Amaral 1983; *Informação Arqueológica* 5 (1982-83), 72). Furthermore, stylistic similarities are often discernible between buildings in different towns of the province; the temple at Eborá, for example, was closely modelled on the so-called ‘Temple of Diana’ (but most likely a temple for the imperial cult) at Emerita (Hauschild 1982), while the bridges at Alter do Chão, at Capera, at Salmantica and over the Aljucen are all similar in design and fabric to that over the Guadiana at Emerita (Alvárez Martínez and Díaz Pintiado 1982, 100). Similarly, the theatres at Metellinum and at Olisipo are clearly modelled on that at Emerita, dedicated in 16 BC (del Amo 1982, 324 on Metellinum; Alarcão 1982, 288 on Olisipo; *CIL* II 474 for date of Emerita theatre). The role of the provincial capital is especially important here; as a Roman colony with its distinctively Roman style of buildings, as we shall see, Emerita provided an ideal model for the other towns of the province when they came to lay out their urban monumental centres. We have already seen how a citizen of Emerita helped in setting up the urban centre of the Igaeditani (see above, p. 162).

But to examine in greater detail the ways in which the urban centres of Lusitania developed under Roman rule, I shall concentrate in this final section on the monumental centres of two towns: Augusta Emerita and Conimbriga, the former as an example of a provincial capital, developed by the Roman authorities as an eloquent symbol of Roman power over the province, the latter a good example of how an Iron Age *oppidum* developed its urban centre in response to being part of the Roman Empire. Emerita provides a striking example of how urban monumentalization was planned from the centre, Rome, while

Conimbriga allows us to look at monumentalization from a peripheral perspective.

Augusta Emerita

In 25 BC P. Carisius, *legatus propraetore* of Augustus, destroyed the town of Lancia in north-west Spain and for the settlement of his veterans founded the colony of Augusta Emerita at the confluence of the Guadiana and the Albarregas rivers, at a point where the major north-south land route in the west of the peninsula crossed the Guadiana on its way to Hispalis (Dio 53.26.1). From the start an ambitious programme of monumentalization was undertaken. For colonies served not only as garrison posts to keep the local population in check, but also as models, or even 'mirror images' of what a Roman town should look like for the benefit of the locals, as Cicero observed of Narbo (Cic. *Pro Font.* 13). The basis for the new urban layout was a rectangular grid of streets crossing at right angles along Hippodamean lines. The Roman sewer system can be reconstructed, and this provides the key to the colony's initial layout (Richmond 1930, 99, 102, 106). On the basis of recent topographical work, Emerita, like Tarraco, had two forums: one (near the modern calle Sagasta and calle de Baños) as the forum of the colony, the other (near the modern plaza del Parador Nacional de Turismo) as the forum of the province and of major significance for the provincial cult of the emperors (Alvárez Martinez 1982; 1985,41-42).

As a vital part of the initial layout of the colony, bridges were built across the Guadiana and the Albarregas, while the Guadiana was dyked to prevent its flooding (Alvárez Martinez 1983). The water supply was assured from an early date, with the three aqueduct systems all probably dating to the Augustan monumentalization (so Canto 1982; *AE* 1984, 493; Alvárez Martinez 1985,42-43). Two sets of public baths have been discovered in connexion with these aqueducts, one in the aptly named calle de Baños (Alvárez Martinez 1985, 41). Public recreation buildings were also constructed in the very earliest years of the colony. The theatre was dedicated in 16 BC (*CIL* II 474; Melida 1915; Saenz de Buruaga 1982), the amphitheatre in 8 BC (Menendez Pidal 1957), while the circus seems to have been built in the reign of Tiberius (Saenz de Buruaga and Alvárez Martinez 1977; Humphrey 1986, 362-376). Temples also formed a major element of the initial monumentalization. A coin type of the colony issued under Tiberius depicts a temple with the legend 'Aetemitati Augustae' (Beltrán 1976, 97, 102-3, and PL. XXXII F). Parts of a temple of Mars can still be seen, built into the Church of Santa Eulalia (León Alonso

1970). The so-called ‘temple of Diana’ (but better seen as a temple for the Imperial cult) was built in the Julio-Claudian period on a podium, hexastyle and peripteral, of local granite and decorated with stucco, and probably formed part of the colonial forum (Alvárez Martínez 1976; 1985, 41); while traces of a massive temple revetted with marble plaques came to light in 1983 in the calle Holguin; it probably provided the focus for the provincial forum (Alvárez Martínez 1985, 41-42; 1986, 156).

But more importantly, these two temples seem to derive stylistically from temples in Rome itself: the ‘temple of Diana’ bears close similarities to the late Republican temples in the Largo Argentina (Alvárez Martínez 1976, 50), while the calle Holguin temple was possibly modelled on the Temple of Concord (Alvárez Martínez 1986, 156). The circus at Emerita is closely modelled on the Circus Maximus at Rome.⁹ But even more stunning similarities with the architecture of Rome itself occur in the forum of the colony. For elements from the decoration of the surrounding portico have come to light. They consist of not only roundels (*clipei*) incorporating heads of Jupiter Ammon and Medusa, but also Caryatids, all of a high standard of craftsmanship (Squarciapino 1976 and 1982). But what is most important is that they show that this portico was modelled very closely on that in the Forum of Augustus at Rome (on which Zanker 1968; Ganzert and Kockel 1988). A high-quality marble relief – possibly of Agrippa sacrificing (Trillmich 1986) – also demonstrates the consistently metropolitan nature of the art and architecture of this new colony.

The date of these elements – and that for the monumentalization of the two forums – is uncertain, but the late Augustan or especially the Julio-Claudian period seems more likely than the early Augustan. Given the logistical problems of creating a new monumental centre from nothing (planning, designing, recruiting of architects, sculptors, artists, obtaining the necessary raw materials), it is unlikely that the whole monumental centre of Emerita could have been put up overnight. But what is clear is that Rome (especially through the agency of Agrippa) planned Emerita as a ‘mirror-image’ of Rome itself (cf. Kienast 1982, 336-365 for the Augustan building programme and Agrippa’s role in them). Emerita was designed as a symbol of Roman power on the periphery of the Empire. The local population could now see for themselves what Roman civilization was all about and, in time, they could use Emerita as a model for urban projects elsewhere in the province.

Conimbriga

The response of an indigenous urban centre to Roman rule in Lusitania can best be gauged from the originally Celtic settlement of Conimbriga. After some proto-urban development in the later Iron Age (see above, [p. 160](#)), Conimbriga became a *civitas stipendiaria* in the Augustan organization of the province (Plin. *NH* 4.22.117) and it was in this period that Conimbriga undertook its first major phase of monumentalization along Greco-Roman lines. A forum (50m x 60m at its widest and longest points: [Fig. 11.6A](#)) was constructed in an area of Iron Age habitations (Alarcão and Etienne 1977, 28-38). It served four functions: religious, political, judicial and commercial. As for the religious, at the north end a temple was built with a skirting portico on both sides and at the rear; as for the political, on the east side a small building has been identified as a local senate-house (*curia*); as for the judicial, alongside this small senate-house was a *basilica*, while on the west side nine shops (*tabernae*) were erected, to enhance the commercial function of the forum. Furthermore, a *cryptoporticus* was constructed beneath the temple portico; this not only served to raise the level of the temple into a dominating position not allowed by the natural topography, but required in Roman town planning (Vitruv. *de Arch.* 1.7.1), but also assured communication between the new forum and the older Iron Age habitation quarter, situated on a lower level to the north of the forum. The open square of the forum was decorated with honorific statues. To the south of the forum a set of public baths were designed in the Augustan period again in a sector of Iron Age dwellings. They were supplied with water by an aqueduct system that led to a source near the modern village of Alcabideque, some 3443 metres from the cold-room of the baths (Alarcão and Etienne 1977, 41-64).

Under the Julio-Claudians typically Roman *atrium*-style houses were built to the west of the forum, while near the public baths more humble dwellings were established (Alarcão and Etienne 1977, 66-81). Thus as the town developed, greater social stratification was manifested in these differentiated habitation zones, some for the richer citizens, others for the poorer. Thus, Conimbriga provides very vivid evidence of an indigenous, Celtic community instituting an ambitious monumentalization along Greco-Roman lines immediately after its integration within the Roman Empire. The local aristocracy were thereby demonstrating their loyalty to Rome and their swift assimilation of Greco-Roman ideals of urban life.

Under Vespasian Latin rights were granted to the communities of the Iberian peninsula, under the terms of which those who held chief

magistracies in the municipalities were eligible to become full Roman citizens (Plin. *NH* 3.3.30). The community of Conimbriga once again responded to this upgrading in status by remodelling its monumental centre on a conspicuous scale. First, this may have been the period when Conimbriga's extra-mural amphitheatre was constructed, but since this has not yet been excavated, its date is by no means certain (Alarcão, Mayet and Nolen 1986, 61). But most significantly, the Augustan forum was radically redesigned: it was not only enlarged, but also aligned on a new axis (Fig. 11.6B). The political and commercial buildings were removed (presumably to another, as yet unexplored site), as happened elsewhere in the Iberian peninsula in the later first century AD: for example, at Belo, where the commercial functions of the old forum were taken over by a newly constructed market-building (Didierjean et al. 1986, 94, 264-266). As a result at Conimbriga the forum became an enclosure devoted wholly to the cult of the Emperor. A still larger temple, built on a podium and with a monumental stairway, was constructed at the northern end and enclosed once again at the back and down its sides with a new portico. The expansion of the forum at the north end demanded the demolition of the Iron Age quarters and also the construction of a new *cryptoporticus*. The entrance to the forum at the south was given a monumental arch – perhaps a tetrapylon, as at Capera (Alarcão and Etienne 1977, 87-111; cf. García y Bellido 1972-74 for Capera). The public baths were substantially extended and redesigned, causing some dislocation of private housing in the vicinity in the Trajanic period (Alarcão and Etienne 1977, 113-133). There may be some significance in this date too, since Trajan of course was the first Roman Emperor to be born in Spain. But on balance I would prefer to see this as the natural completion of the Flavian monumentalization. Thereafter, there was no major redevelopment of the monumental centre, but there were frequent alterations and embellishments to the private houses. The town was fortified in the third century, the wall cutting through a zone of luxurious, private dwellings (Alarcão and Etienne 1977, 135-163).

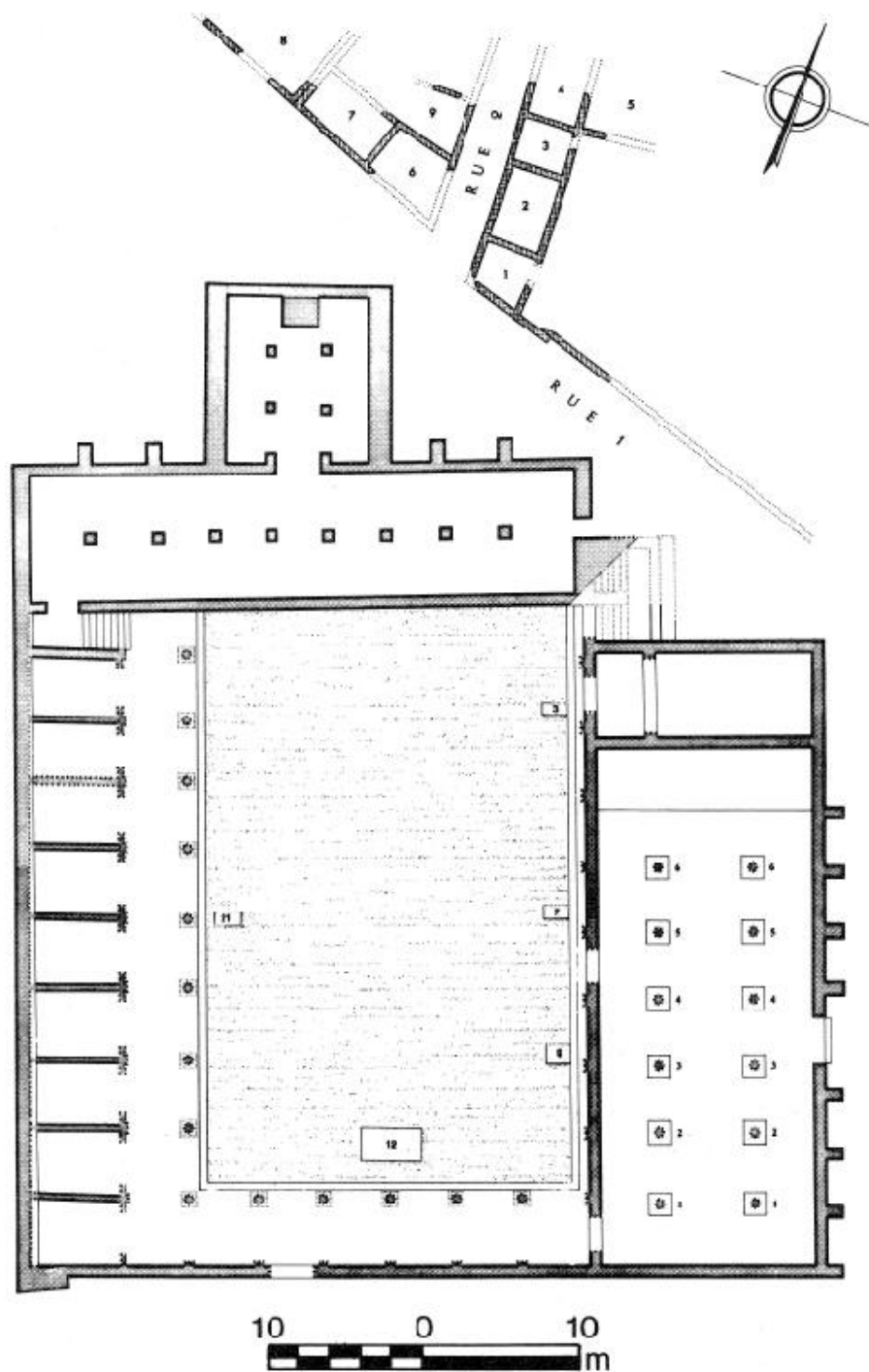


Fig. 11.6A The Augustan forum at Conimbriga (reproduced from Alarcão and Etienne 1977, by kind permission of the publishers).

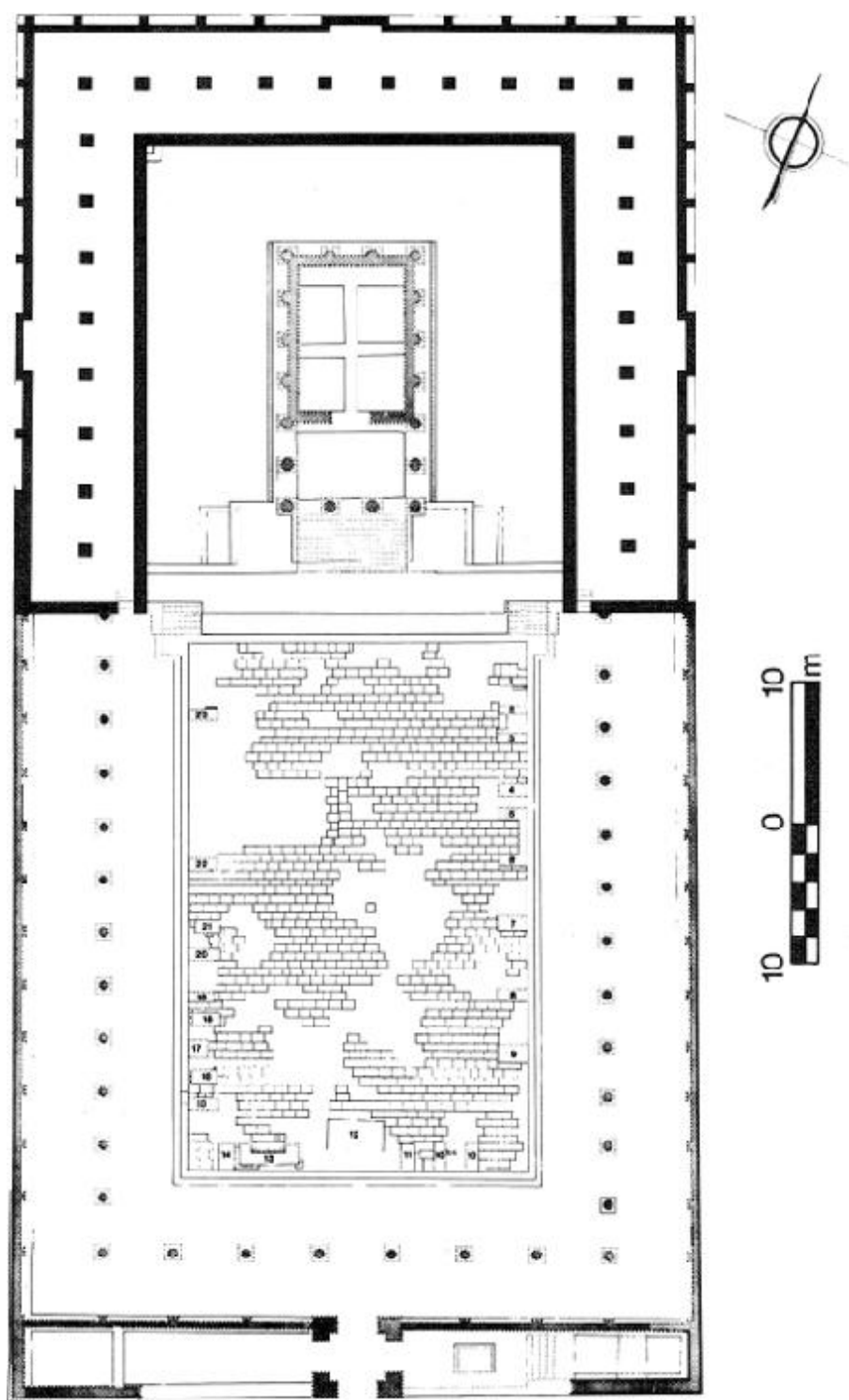


Fig. 11.6B The Flavian forum at Conimbriga (reproduced from Alarcão and Etienne

The successive phases of monumentalization of Conimbriga graphically illustrate the possible response of an indigenous community to the impact of Roman provincial rule. It is the timings of Conimbriga's adjustments that are of especial interest; for the local élite chose to upgrade the quality of the urban centre in Roman style at just those moments when the status of the community was upgraded first to *civitas stipendiaria* and subsequently to the Latin rights of citizenship. Conimbriga was not the only Lusitanian town to upgrade its urban centre, when its status was upgraded: recent excavations at Mirobriga Celtica (modern Santiago do Cacém) have revealed that the forum there was also considerably embellished in the Flavian period (Biers et al. 1984, 110; *Informação Arqueológica* 5 (1982-83), 129).

Conclusion

Towns, though not great in density, still formed a major feature of the Roman landscape of Lusitania. Some were created anew to assist the Roman administrative machinery, but most developed naturally out of Iron Age centres of habitation. What is clear is that towns were not a Roman importation; there had been considerable urban development before the arrival of the Romans even in Celticised areas, where hill-forts represented the characteristic form of settlement. The archaeological evidence provides a substantial corrective to the account of Strabo, who perhaps reproduces something of the rhetoric of Roman conquest in his willingness to depict Lusitania as a barbarian zone, outside the cultural orbit of civilization. This very rhetoric that painted Lusitania as a barbarous zone would have helped the Romans to justify their military aggression and subsequent regulation of the area. Contrary to Strabo's view, Rome preferred, wherever possible, to maintain the status quo and not to cause widespread dislocation in areas that Rome wanted subsequently to exploit. If urban development had already taken place, that formed the ideal basis for the Roman organization of that territory. It was only in those areas of less well-defined territories that she had to impose a new urban matrix. Finally, the development of Roman towns or *vici* on sites of Iron Age settlement raises the possibility that Rome also maintained the existing indigenous élite in their positions of authority. In all provinces Roman bureaucracy was minimal; she preferred to rely in great part on the indigenous élite. By maintaining

them in their existing positions of influence, and by giving them access sooner or later to Roman status, Rome created for herself not only natural allies, but also the necessary social underpinning for the process of imperial rule. In response, it was this native élite who took over the outward forms of Roman culture – not only for themselves, but also for their own native communities.

Acknowledgements

I am most grateful to Professors Michael Crawford and John Crook and to audiences in Canterbury and Toronto for their comments on versions of this paper. The written version was completed in the summer of 1987; since then it has been possible only to make some bibliographical updates.

Notes

1 The Lusitanians, for example, are berated for their use of beer and butter and flour made from acorns: 3.3.7; 3.4.16; at 3.3.7 Strabo refuses to list all the tribes of the interior “because their names are so unpleasant on the ear”.

2 For similar formulations in Strabo’s work see 17.3.15 (Numidia), 4.1.11 (the Allobroges), 4.1.14 (Tolosa in Gallia Narbonensis).

3 For some stimulating ideas on ‘Romanization’ in a neighbouring, but more remote area of the Empire, Gallaecia, see Pereira Menaut 1984.

4 Mill-stones have been found for example at Castro de São Miguel, Amêndoa, Mação (Pereira 1970, 245-6); seeds and acorns at Castro da Senhora da Guia, Baiões, S. Pedro do Sul (Tavares da Silva 1980, 176).

5 Cf. the votive terracottas of parts of the body found in sanctuaries of Aesculapius: for example, at Fregellae, Italy: Coarelli et al. 1986.

6 Note the recent find of a ‘terminus Augustalis finis Emeritensium’ from the *finca* Altos de Soloparza, Valencia del Ventoso (now in the Museo Provincial, Badajoz): referred to by Álvarez Martínez 1986, 105. It would suggest an enclave of territory belonging to Emerita between the territories of the Baetican cities of Curiga to the south, Nertobriga and Seria Fama Iulia.

7 For example, in the *concelho* of São Pedro do Sul: sites at Castro de Carcoda (Carvalhais), Rompecilha and Monte de Santa Maria/Monte Redondo (Fiães, Vila de Feira); to date, only one can be shown to have been abandoned possibly during the Roman conquest of the region: Senhora da Guia, Baiões: Tavares 1970, 665-666; de Almeida 1975.

8 The following Iron Age sites continued in occupation: Yecla de Yeltes, Saldeana, Vitigudino, Iruena, Fuenteguinaldo, Lerilla, Picon del Rey, Sandanuela, Ermita de la Virgen del Castillo, Villarino de los Aires, Carrascal del Obispo, Teso de Utrera, Alba de Tormes, Castillo Viejo (Valero), Navagallega, Cabeza del Castillo (Lagunilla), Béjar: Maluquer de Motes 1956, sv. sites.

9 I am grateful to Prof. J. Humphrey for pointing this out in discussion.

Bibliography

- Alarcão, A.M., Mayet, F. and Nolen, J. Smit 1986 *Ruínas de Conimbriga* (Roteiro da Arqueologia Portuguesa, 2), Lisbon.
- Alarcão, J. de, 1979 'As origens de Coimbra' in *Actas das I Jornadas do grupo de arqueologia e arte do Centro (GAAC)*, Coimbra, 23-40.
- Alarcão, J. de, 1982 'O teatro romano de Olisipo' in *El teatro en la Hispania romana (simposio, Mérida, 1980)*, Badajoz, 286-316.
- Alarcão, J. de, 1983 *Portugal romano* (3rd ed.), Lisbon.
- Alarcão, J. de and Etienne, R. 1977 *Fouilles de Conimbriga. I. L'Architecture*, Paris.
- Alarcão, J. de, Etienne, R. and Mayet, F. forthcoming *Les villas romaines de São Cucufate (Portugal)*, Paris.
- Albertini, E. 1932 *Les divisions administratives de l'Espagne romaine*, Paris.
- Albertos Firmat, M.L. 1975 *Organizaciones suprafamiliares en la Hispania antigua* (Studia Archaeologica, 37), Valladolid.
- Albertos Firmat, M.L. 1981 'Organizaciones suprafamiliares en la Hispania antigua (II)', *BSEAA* 47: 208-214.
- Alföldy, G. 1987 *Römisches Städtewesen auf der neukastilischen Hochbene: ein Testfall für die Romanisierung*, (Abhandlungen der Heidelberger Akad. der Wissenschaften, 1987 no. 3), Heidelberg.
- Almagro Basch, M. 1966 *Las estelas decoradas del suroeste peninsular* (Bibliotheca Praehistorica Hispana, VIII), Madrid.
- Almagro Gorbea M. 1970 'Hallazgo de un kylix ático en Medellin (Badajoz)', *XI Congreso Nacional de Arqueología, Mérida, 1968*, Zaragoza, 437-448.
- Almagro Gorbea M. 1971 'La necropolis de Medellín (Badajoz). Aportaciones al estudio de la penetración del influjo orientalizante en Extremadura' *Noticiario Arqueológico Hispánico: Arqueología*, 16: 161-202.
- Almeida, C.A.F. de, 1975 'Influências meridiais na cultura castreja' in *XIII Congreso Nacional de Arqueología, Huelva, 1973*, Zaragoza, 491-498.
- Almeida, D.F. de, 1977 'Civitas Igaeditanorum et Egilânia: municipium romain, ville épiscopale wisigotique' in P.M. Duval and E. Frezouls (ed.), *Thèmes de recherches sur les villes antiques d'Occident (colloque, Strasbourg, 1972)*, Paris, 39-53.
- Alvárez Martinez, J.M. 1976 'El templo de Diana' in *Augusta Emerita: actas del bimilenario de Mérida*, Madrid, 43-53.
- Alvárez Martinez, J.M. 1982 'El foro de Augusta Emerita' in *Homenaje a Saenz de Buruaga*, Badajoz, 53-68.
- Alvárez Martinez, J.M. 1983 *El puente romano de Mérida* (Monografías Emeritenses, 1), Badajoz.
- Alvárez Martinez, J.M. 1984 'Consideraciones sobre la Mérida prerromana' *Revista de Estudios Extremeños* 40: 101-109.
- Alvárez Martinez, J.M. 1985 'Excavaciones en Augusta Emerita' in *Arqueología de las ciudades modernas superpuestas a las antiguas (Zaragoza, 1983)*, Madrid, 35-53.
- Alvárez Martinez, J.M. 1986 'Epoca romana' in M. Terrón Albarrán (ed.), *Historia de la Baja Extremadura*, Badajoz, Part II.
- Alvárez Martinez, J.M. and Diaz Pintiado, J.A. 1982 'El puente romano de Aljucen' in *Homenaje a D. J. Canovas Pesini*, Badajoz, 95-100.
- Alves, L.F. Delgado 1956 'Aspectos de arqueología em Myrtilis', *Arquivo de Beja*, 13: 21-104.
- Amo, M. del 1982 'El teatro romano de Medellín' in *El teatro en la Hispania romana*

(*simposio, Mérida, 1980*), Badajoz, 317-336.

Arnaud, J.M. and Gamito, T.J. 1974-77 'Cerâmicas estampilhadas da idade do ferro do sul de Portugal. I', *O Arqueólogo Português*, série iii, 7-9: 165-202.

Arruda, A.M. 1983-84 'Alcáçova de Santarém. Relatório dos trabalhos arqueológicos de 1984', *Clio: Arqueologia*, 1: 217-224.

Arruda, A.M. and Catarino, H. 1982 'Cerâmica da Idade do Ferro da Alcáçova de Santarém', *Clio* Lisbon, 4: 35-39.

Augusto Tavares, A. 1970 'A romanização dos castros do concelho de S. Pedro do Sul', *XI Congreso Nacional de Arqueologia, Mérida, 1968*, Zaragoza, 665-666.

Beltrán, A. 1976 'Las monedas romanas de Mérida: su interpretación histórica' in *Augusta Emerita: actas del bimilenario de Mérida*, Madrid, 93-105.

Beltrán Lloris, M. 1973 *Estudios de Arqueologia cácerense* (Monografías arqueológicas, XV), Zaragoza.

Biers, W., Caeiro, J., Leonard Jr., A. and Soren, D. 1984 'Investigações em Mirobriga (Santiago do Cacém), Portugal, 1981', *Arquivo de Beja*, série ii, 1: 107-114.

Blanco Freijeiro, A. 1981 'Cancho Roano: un monumento proto-histórico en los confines de la antigua Lusitania', *Boletín de la Real Academia de Historia* 178: 225-241.

Blázquez, J.M. 1975 *La Romanización. II. La sociedad y la economía en la Hispania romana* (= Ciclos y temas de la historia de España), Madrid.

Brunt, P.A. 1981 'The revenues of Rome', *Journal of Roman Studies* 71: 161-72.

Burkert, W. 1985 *Greek Religion* (tr. J. Raffan), Oxford.

Cabré Aguiló, J. 1930 *Excavaciones de las Cogotas, Cardeñosa (Avila). I. El Castro* (Memorias de la Junta Superior de Excavaciones Arqueológicas, 110), Madrid.

Cabré Aguiló, J. 1932 *Excavaciones de las Cogotas, Cardeñosa (Avila). II. La necropolis* (MemJSEA, 120), Madrid.

Callejo Serrano, C. 1968 'La arqueología de Norba Caesarina', *Archivo español de Arqueologia* 41: 121-49.

Canto, A.M. 1982 'Sobre la cronología augustea del acueducto de los Milagros de Mérida' in *Homenaje a Saenz de Buruaga*, Badajoz, 157-176.

Casariago, A., Cores, G. and Pliego, F. 1987 *Catálogo de plomos monetiformes de la Hispania antigua* (Serie numismática, 1), Madrid.

Cesar Moran, P. 1924-25 *Excavaciones en el Cerro de Berrueco* (MemJSEA, 65), Madrid.

Coarelli, F. et al. 1986 *Fregellae. 2. Il santuario di Esculapio*, Rome.

Coelho, L. 1986 'Inscrições da necrópole proto-histórica da herdade do Pêgo – Ourique', *O Arqueólogo Português*, série iii, 5: 167-180.

Didierjean, F., Ney, C. and Paillet, J.-L. 1986 *Belo III. Le Macellum* (Publ. de la Casa de Velázquez, série archéologique, fasc. V), Madrid.

Drinkwater, J.F. 1987 'Urbanization in Italy and the western Empire' in J. Wachter (ed.), *The Roman World*, London, I, 345-387.

d'Encarnação, J. 1975 *Divindades indígenas sob o domínio romano em Portugal: subsídios para o seu estudo*, Lisbon.

d'Encarnação, J. 1984 *Inscrições romanas do Conventus Pacensis: subsídios para o estudo da romanização*, Coimbra.

Edmondson, J.C. 1987 *Two Industries in Roman Lusitania: Mining and Garum Production* (B.A.R. International Series, 362), Oxford.

Edmondson, J.C., forthcoming a 'Le garum en Lusitanie urbaine et rurale: hiérarchies de demande et de production' in J.-G. Gorges (ed.), *Les villes de la Lusitanie romaine: hiérarchie et territoires*.

- Edmondson, J.C., forthcoming b 'Instrumenta Imperii: law and imperialism in Republican Rome' in B. Halpern and D. Hobson (ed.), *Law in its Social Setting in the Ancient Mediterranean World*.
- Etienne, R. 1982 'Les sénateurs originates de Lusitanie' in *Epigrafia e ordine senatorio* (Tituli, 5), Rome, 521-29.
- Fabre, G. 1974 'A propos d'une inscription sur brique inédite de Conimbriga' *Actas do III Congreso Nacional de Arqueologia, Porto, 1973*, Oporto, 191-200.
- Fernandez Gomez, F. 1986 *Excavaciones arqueológicas en El Raso de Candeleda*, Avila.
- Février, P.A. and Leveau, P. (eds.) 1982 *Villes et campagnes dans l'Empire romain: actes du colloque à Aixen-Provence, 1980*, Aix-en-Provence.
- Finley M.I. 1977 'The ancient city: from Fustel de Coulanges to Max Weber and beyond', *Comparative Studies in Society and History* 19: 305-327.
- Galsterer, H. 1971 *Untersuchungen zum römischen Städtewesen auf der iberischen Halbinsel* (Madriider Forschungen, 8), Berlin.
- Gamito, T.J. 1982 'A idade do ferro no sul de Portugal: problemas e perspectivas', *Arqueologia (Porto)* 6: 65-78.
- Ganzert, J. and Kockel, V. 1988 'Augustusforum und Mars-Ulter-Tempel' in W.-D. Heilmeyer, E. la Rocca and H.G. Martin (ed.), *Kaiser Augustus und der verlorene Republik*, Mainz, 149-199.
- García y Bellido, A. 1971 'El recinto mural romano de Evora', *Conimbriga* 10: 85-92.
- García y Bellido, A. 1972-74 'El tetrapylon de Capera (Capera, Cáceres)', *Archivo español de Arqueologia* 45-47: 45-90.
- Gorges, J.-G. 1979 *Les villas hispano-romaines: inventaire et problématique archéologiques* (Publ. du Centre Pierre Paris, 4), Paris.
- Gorges, J.-G. 1982 'Centuriation et organisation du territoire: notes préliminaires sur l'exemple de Mérida' in Février and Leveau 1982, 101-110.
- Gorges, J.-G. 1986 'Prospections archéologiques autour d'Emerita Augusta. Soixante-dix sites ruraux en quête de signification', *REA* 88 (= *Hommage à R. Etienne*): 215-236.
- Goudineau, C. 1979 *Les fouilles de la Maison au Dauphin: recherches sur la romanisation de Vaison-la-Romaine* (Gallia, Suppl. XXXVII), Paris.
- Harrison, R.J. 1988 *Spain at the Dawn of History: Iberians, Phoenicians and Greeks*, London.
- Hauschild, T. 1982 'Zur Typologie der römischen Tempel auf den iberischen Halbinsel: peripterale Anlagen in Barcelona, Mérida und Evora' in *Homenaje a Saenz de Buruaga*, Badajoz, 145-156.
- Humphrey, J.H. 1986 *Roman circuses: arenas for chariot racing*, London.
- Jiménez de Gregorio, F. 1952 'Hallazgos arqueológicos en la Jara. V', *Archivo español de Arqueologia* 25:150-160.
- Kalb, P. and Höck, M. 1984 'Moron – historisch und archäologisch', *Madriider Mitteilungen* 25: 92-102.
- Kienast, D. 1982 *Augustus: Prinzeps und Monark*, Darmstadt.
- Klein, J. 1920 *The Mesta: a study in Spanish economic history 1273-1836*, Cambridge (Mass.).
- León Alonso, M. del Pilar, 1970 'Los relieves del templo de Marte en Mérida', *Habis* 1: 181-197.
- Lopez Monteagudo, G. 1982 'Las esculturas zoomorfas 'Celticas' de la peninsula ibérica y sus paralelos polacos', *Archivo español de Arqueologia* 55: 3-30.
- Maia, M. 1980 'Povos do sul de Portugal nas fontes clássicas – Celtici e Turduli', *Clio* (Lisbon) 2: 67-70.

- Maia do Amaral, A.E. 1983 *Considerações preliminares acerca do Forum II de Bobadela*, Coimbra (first published in *Munda* 4 (1982), 33-39; 5 (1983), 3-14).
- Maluquer de Motes, J. 1951 'De la Salamanca primitiva', *Zephyrus* 2: 61-72.
- Maluquer de Motes, J. 1956 *Carta arqueológica de España: Salamanca*, Salamanca.
- Maluquer de Motes, J. 1983 *El santuario protohistórico de Zalamea de la Serena, Badajoz. II. 1981-82* (= Programa de investigaciones protohistóricas, 5), Barcelona.
- Martín Valls, R. 1976 'Nuevos hallazgos arqueológicos en Ciudad Rodrigo' *Zephyrus* 26-27: 373-388.
- Melero, R.L. et al. 1984 'El bronce de Alcántara. Una dedictio del 104 a.C.' *Gerión* 2: 265-323.
- Melida, J.R. 1915 'El teatro romano de Mérida', *Revista de Archivos, Bibliotecas y Museos* 32: 1-38.
- Mello Beirão, C. et al. 1985 'Depósito votivo da II idade do ferro de Garvão: notícia da primeira campanha de escavações', *O Arqueólogo Português*, série iv, 3: 45-136.
- Menéndez Pidal y Álvarez, J.R. 1957 'Restitución del texto y dimensiones de las inscripciones históricas del anfiteatro de Mérida', *Archivo español de Arqueología* 30: 205-217.
- Oliveira Marques, A.H. de 1978 *Introdução a história de agricultura em Portugal: a questão cerealífera durante a Idade Média* (3rd ed.), Lisbon.
- Pereira, M.A. 1970 *Monumentos históricos do concelho de Mação*, Mação.
- Pereira Menaut, G. 1984 'La formación histórica de los pueblos del norte de Hispania. El caso de Gallaecia como paradigma', *Veleia* 1: 271-287.
- Pinel, C. 1981 'El yacimiento tardorromano de 'El Soto', Calvarrasa de Abajo (Salamanca)', *Zephyrus* 32 33: 217-225.
- Ponte, S. da 1985a 'Estação arqueológica na Rua Carlos Campeão: relatório preliminar de 1982/3', *Arqueologia na região de Tomar (da pré-história a actualidade)* 1: 89-101.
- Ponte, S. da 1985b 'Tomar – antiga Sellium', *Arqueologia (Porto)* 11: 112-114.
- Ribeiro, F. Nunes 1960 'Pré-história e a origem de Beja', *Arquivo de Beja*, 17: 3-113.
- Richardson, J.S. 1986 *Hispaniae: Spain and the development of Roman Imperialism 218-82 BC*, Cambridge.
- Richmond, I.A. 1930 'The first years of Emerita Augusta', *Archaeological Journal* 87: 98-116.
- Rodríguez Díaz, A. 1986 *Arqueologia de Tierra de Barros*, Badajoz.
- Roldán Hervás, J.M. 1968-69 'Fuentes antiguas para el estudio de los Vettones', *Zephyrus* 19-20: 73-106.
- Saenz de Buruaga, J.A. 1982 'Observaciones sobre el teatro romano de Mérida' in *El Teatro en la Hispania romana (simposio, Mérida, 1980)*, Badajoz, 303-316.
- Saenz de Buruaga, J.A. and Álvarez Martínez, J.M. 1977 'Informe sobre los trabajos realizados en el circo romano de Mérida', *Noticiario arqueológico hispánico: Arqueologia* 5: 97-103.
- Salinas de Frías, M. 1986 *La organización tribal de los Vettones (pueblos prerromanos de Salamanca* (2nd. ed.), Salamanca.
- Santos Rocha, A. dos 1905-08 'Estações pré-romanas da idade do ferro nas vizinhanças da Figueira da Foz em Portugal', *Portugalia* 2, fasc. 3: 301-359.
- Shaw, B.D. 1982-83 "'Eaters of flesh, drinkers of milk": the ancient Mediterranean ideology of the pastoral nomad', *Ancient Society* 13-14: 5-31.
- Sillières, P. 1982 'Centuriation et voie romaine au sud de Mérida: contribution à la

- délimination de la Bétique et de la Lusitanie', *Mélanges de la Casa de Velázquez* 18: 437-448.
- Slade, K.W., Biers, W.R., Biers, J.C. and Soren, D. 1983 'Mirobriga: the 1983 season', *Muse* 17: 38-63.
- Soares, J. and Tavares da Silva, C. 1986 'Ocupação pré-romana de Setúbal: escavações arqueológicas na Travessa dos Apóstolos' in *I Encontro Nacional de Arqueologia Urbana (Setúbal 1985)*, Lisbon, 1986.
- Soria Sanchez, V. 1985 'Descubrimientos arqueológicos en Extremadura', *XVII Congreso Nacional de Arqueología, Logroño, 1983*, Zaragoza, 483-499.
- Squarciapino, M.F. 1976 'Ipotesi di lavoro sul gruppo di sculture da Pan Caliente' in *Augusta Emerita: actas del bimilenario de Mérida*, Madrid, 55-62.
- Squarciapino, M.F. 1982 'Cultura artistica di Mérida romana' in *Homenaje a Saenz de Buruaga*, Badajoz, 33-52.
- Tavares da Silva, C. 1980 'Contribuição para o estudo da cultura castreja na Beira Alta', *Actas do Seminario de Arqueologia do noroeste peninsular*, Guimarães, 1980, II, 171-181.
- Tavares da Silva, C. et al. 1980-1981 'Escavações arqueológicas no Castelo de Alcácer do Sal (campanha de 1979)', *Setúbal Arqueológica*, 6-7: 149-218.
- Tovar, A. 1966-67 'L'inscription du Cabeço das Fraguas et la langue des Lusitaniens', *Etudes Celtiques* 11:237-268.
- Tranoy, A. 1981 *La Galice romaine: recherches sur le nord-ouest de la péninsule ibérique dans l'antiquité* (Publ. du Centre Pierre Paris, 7), Paris.
- Trillmich, W. 1986 'Ein historisches Relief in Mérida mit Darstellung des M. Agrippa beim Opfer: ein Rekonstruktionsversuch', *Madridier Mitteilungen* 27: 279-304.
- Untermann, J. 1980 'Hispania' in G. Neumann and J. Untermann (ed.), *Die Sprachen im römischen Reich der Kaiserzeit* (Beihefte der Bonner Jahrbücher, 40), Bonn, 1-17.
- Vasconcelos, J. Leite de 1905 *Religiões da Lusitânia*, II, Lisbon.
- Vaz, J.L. 1979 'Termino augustal de Goujoim (Armamar)', *Conimbriga* 18: 133-138.
- Vieira da Silva, A. 1944 *Epigrafia de Olisipo: subsídios para a história de Lisboa romana*, Lisbon.
- Vives y Escudero, A. 1924 *La moneda hispánica*, III, Madrid.
- Zanker, P. 1968 *Forum Augustum*, Tübingen.

12. Urban munificence and the growth of urban consciousness in Roman Spain¹

by Nicola Mackie

Introduction

My first quotation comes from a Roman lawyer writing at the end of the second century AD:

...If anyone has promised to embellish with marble a building constructed by someone else, or to add to it any other way in accordance with the people's wish, inscribing his own name on it: the senate resolved that this should be done, provided that the inscriptions of the previous builders remained intact. But if private individuals have contributed some money of their own to buildings constructed at public expense, it is provided in the same (imperial) mandates that they should inscribe their own names only to record the amount of money they contributed to the work. (Callistratus in *Digest* 50, 10, 7. 1)

Although this quotation comes from a Roman (not a local Spanish) source, and belongs to a date in the history of the Roman Empire when Spanish 'urban consciousness' could be said to have reached maturity, it concerns precisely the type of evidence which I mean to discuss: that is, inscriptions recording expenditure by individuals on public buildings and other amenities in the towns of Roman Spain. Such inscriptions, as is well known, are to be found widely distributed over the Romanized (and Hellenized) areas of the Roman Empire. They reflect a pattern of communal life which has sometimes been equated with 'Romanization' itself; a life centred around urban buildings, and urban activities, which were frequently paid for out of the pockets of wealthy individuals. Our quotation shows some of the legal industry which was generated as a by-product of this lifestyle: the writer addresses himself to the question who, in what circumstances, was entitled to inscribe his (or her) name on a public building, and exactly what such an inscription ought (explicitly or implicitly) to claim. Had the individual in question paid the whole cost of the building, or only a part; was it a case of an entirely new building, or just some addition or embellishment to an existing one?

The purpose of this paper is to investigate how and why the practice of urban munificence gained ground in the Spanish provinces of the Roman Empire; and how it was related to the more general phenomenon which we call 'Romanization', a term which I take to mean (among other things) the assimilation of the Latin language, of Roman political, legal, social and economic practices, of Roman architecture, artefacts, and technological skills. I am more interested in Romanization as a process than as a state (felicitously?) achieved. The fact that this paper spans, not the first two centuries of Roman control in Spain, but the two centuries after that (beginning, roughly, with the reign of Augustus), will I hope serve to emphasize that the process of Romanization was complicated and long-drawn-out, without any clear starting-point (or conclusion). Whatever we adopt as our starting-point, we are rarely confronted with a simple dichotomy of things 'Roman' supervening on what was 'native', 'indigenous', 'barbarian' and so on; for however early we go into the history of a province, and however minimally we define 'Romanization', we continue to find that what there is resembles what went before.

It has been said that, in the provinces of the Roman Empire, 'romaniser c'est municipaliser en même temps qu'urbaniser' – to Romanize was to municipalize and to urbanize at the same time – (Gagé 1964, 153-4). ('Urbanization', in this context, refers to the habit of treating a single settlement as the political centre for a territory, as well as to the social, economic, and architectural development of the settlement itself). The statement perhaps over-simplifies, not just because it diverts attention from the private, non-urban, aspects of cultural change. We are left with the impression that Romanization was a sort of package whose elements all came in a single wrapper, and a package which someone – whether the provincials themselves, or the Roman government quite consciously and deliberately set out to get, or to impose. Whatever the ambitions on either side, we should not expect the process to have been so straightforward.

This simple view is one into which we are led both by our own hindsight, and by the perspective of the ancient literary sources. (This is not to find fault, except perhaps on ideological grounds, with the ancient sources: they were not composed with our particular requirements in mind). 'It is less a province than a part of Italy,' said Pliny approvingly of Southern Gaul (Natural History 3, 31); and about Southern Spain Strabo, writing in the early Principate, made a similar judgement: 'they have changed over completely to the Roman lifestyle, and do not even remember their own language any more' (3,

2, 15). We find the poet Calpurnius Siculus using Andalusia ('exposed to the savage Moors') as a romantic image of exile at the world's end (4, 37-49); and Martial in Bilbilis (Calatayúd) being stifled by his 'provincial desert' but also luxuriating in the freedom of not having to dress up in his toga (*Epigrams* 12 pr., 18, 17-18). Rome and Italy are the centre, and the norm; the cultural magnetism they exercise is simple and inevitable, because what lies beyond is savage, uncultivated, and ultimately invisible.

This same perspective, as well, tends to make us think of the striking uniformity of monumental architecture, inscriptions, and local government throughout the Western Empire as (frankly) rather dull. Roman was what the natives wanted (or should have wanted) to be, and, allowing for their limitations, they achieved it (more or less). But, unexciting though uniformity may seem in itself, the fact of uniformity may be surprising and remarkable. The result conceals from us the complexity of its causes. I shall argue that the practice of urban munificence in Spain was not just part of a Romanization 'package', but had its own logic and its own dynamics, which not only help to explain the growth of the practice itself, but also indicate how urban munificence made a creative contribution to the process of Romanization in the Spanish provinces.

The cultural background

By the beginning of our era, the Romans had had a foothold in Spain for over two hundred years; their control spread gradually from the east coast and the south until, by the middle of Augustus' reign, it covered the whole peninsula. Phoenicians, Greeks, and Carthaginians, earlier than the Romans, had visited and occupied the accessible coastal areas. The Mediterranean fringes of Spain, at least, were identified with a long history of Mediterranean civilizations in rise and decline. If foundation-legends are (as Wiseman 1983 has suggested in the case of Italian towns) to be taken as markers of cultural development, parts of Spain were, well in advance of the fall of the Roman Republic, embedded in a Greco-Roman cultural tradition. Odysseus had visited Andalusia: there was a city of Odyssea named after him, and a temple of Athene containing shields and ships' prows commemorating his wanderings (Strabo, 3, 4, 3, citing Posidonius, Artemidorus, and Asclepiades of Myrleia). And before Odysseus there was Heracles, whose 'Pillars' the people of Gades (Cádiz) claimed as the site of their town, and who had adopted as his own the Punic temple of Melkart in Gades (Strabo 3, 5, 5; García y Bellido 1967a, 152-66). As for acquaintance with the Latin language,

and with Roman law, the recently-discovered inscriptions from Alcántara and Contrebia (Botorrita) prove that this existed, in inland Spain, as early as the beginning of the first century BC (Richardson 1986, 164-5; 199-201). Contrebia had, by the same date, a large, rectangular, two-storey building which was not exactly 'Greek' or 'Roman' in style, but which represented a good step along the way towards the urban architecture of Imperial Spain (Richardson 1986, 172-3; Beltrán and Tovar 1982, 22-33). The earliest known villas in the peninsula, in Catalonia, the Levant, and Andalusia, date from the late second century BC (Gorges 1979, 23-9). Already in the Republican period there were Roman settlers; trade with Italy and the eastern Mediterranean; and Iberian coinages reaching back to the third century (Richardson 1986, 172-5; Villaronga 1973; 1984).

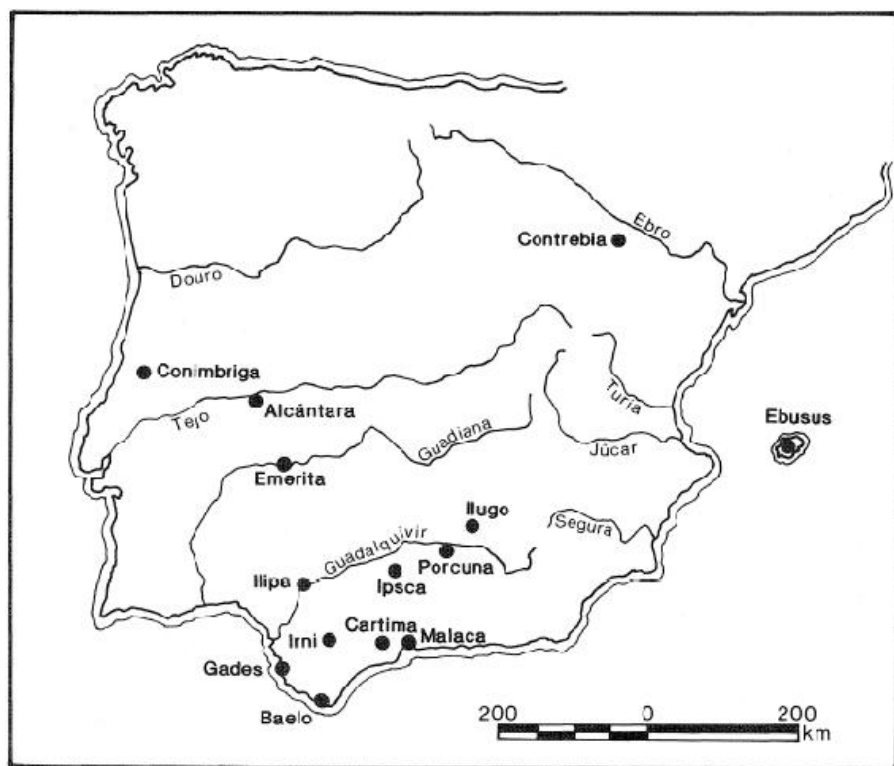


Fig. 12.1. Map of Spain showing the findspots of the inscriptions mentioned in the text.

As all this shows, the roots of 'Romanization' in Spain were by no means exclusively Roman. But, by the early Empire, it was the Roman version of Mediterranean culture that was winning. Heracles of Gadeira became Hercules Gaditanus (*CIL II*, 3409; García y Bellido

1967a, 164); Greek, Punic and Iberian had by Augustus' reign virtually disappeared from inscriptions, and from coins as well (Mackie 1983, 13 note 8; cf. Alföldy 1975, nos. 4, 9, 18). And here one might raise a question about the cultural implications of learning, and using, a foreign language. Of all the aspects of Roman culture, the Latin language itself was perhaps most easily and readily absorbed by the Spaniards. (On the learning and use of Latin in Spain, see García y Bellido 1967b). But, through its implications for all areas of life-social, economic, legal, and political – may it not have contributed more than any other single aspect of cultural change?

Inscriptions and their uses

The usefulness of inscriptions for our present project lies first of all in the fact that they have survived, while the activities, and frequently even the buildings, to which they refer have disappeared from sight. But it is not simply a matter of using inscriptions as evidence, *faute de mieux*, because they happen to have survived. On the contrary, inscriptions are an unparalleled repository of answers to such questions as 'Who paid for public building and entertainments?', 'How much money did individuals commonly spend?', 'What did they gain by doing so?' (cf. Duncan-Jones 1982; 1985; Frere 1985). Without an inscription to inform us, we should not know that it was Marcus Agrippa who built the famous theatre at Emerita (Mérida -*CIL II* 474 = *ILS* 130); and at well-excavated sites which are relatively poor in inscriptions, for example Baelo (Bologna) and Conimbriga (Condeixa-a-Velha), archaeology in itself leaves numerous questions of this type unanswered (see Domergue 1973; Alarcao and Etienne 1977-9).

This is not to deny that, as evidence, inscriptions have some serious pitfalls. Using inscriptions as evidence is not unlike running a film backwards towards an initial scene (the context in which the stones were inscribed) without which we cannot make sense of the ending (the inscriptions we find ourselves studying now). And the film as it runs may jar, or slip off the reel altogether. The inscriptions we study may mislead us as to the incidence (absolute or relative) of a certain activity, in a certain place, at a certain time, for a variety of reasons: accidents of survival, availability or non-availability of suitable stone, the presence or absence of the 'epigraphic habit' (or 'epigraphic consciousness') among the people concerned. (On these problems see MacMullen 1982; Mann 1985). The 'epigraphic habit', if it is found to have been present at all, may in turn be unpacked into an habitual bias towards recording on stone some events rather than others: for example, deaths rather than business contracts, mature deaths rather

than infant ones (cf. MacMullen 1982, 239), private benefactions rather than expenditure from a community's public funds, and so on. Such bias will not always be predictable from the outside, but may instead derive from cultural attitudes which we look to our (biased sample of) inscriptions to elucidate. And so, in using the evidence of inscriptions (as here) to study the practice of urban munificence in Roman Spain, we must constantly be asking ourselves about the inscriptions we do *not* have, and why we do not have them: from accidents of survival to habitual bias, there is a whole series of possible alternatives to the easy answer 'Such happenings were rare, or no-existent'.

Let us return, warned of these pitfalls, to the nature of the present project, and to the more positive aspects of the epigraphic evidence. Through the answers which they provide to such questions as 'Who paid?' and 'Why?', the inscriptions can be used to map out a *specific* practice of urban munificence in Roman Spain consisting both of certain patterns of behaviour and also (I would hold) of certain beliefs, shared between donors and their communities, about the appropriate forms, occasions, motives, and rewards, of munificence. And this in turn will help to explain how and why the practice gained ground, and how it was related to other developing phenomena which commonly appear alongside urban munificence in the 'package' vision of Romanization alluded to in my introduction.

The reason why it is important to map out a specific practice is not that urban munificence in Roman Spain was necessarily different from urban munificence elsewhere (although it may have been), but that terms like 'urban munificence' and 'civic pride' are on their own too vague. Unless we know the details, we shall literally not know what was going on, nor shall we know how it was related to anything else. To refer to 'beliefs' as constituting part of the practice is neither to deny individuality to ancient perceptions of a particular case of munificence, nor to be naive about the (conscious and unconscious) motives of benefactors. It is merely to imply that, in any society, there are certain common modes of thought which influence the ways in which actions are perceived, and the sorts of aspirations peoples have. For example (as will be seen in the following sections) the concept of *honor* as a motive and reward for benefactions appears to have been fundamental to the practice of urban munificence in Spain; and the language of the inscriptions is particularly helpful in drawing attention to the varied aspects of the concept. But this does not preclude the presence of other, indeed idiosyncratic, motives and reactions, some of which can themselves be deduced, directly or

indirectly, from the epigraphic evidence.

Finally, it is perhaps appropriate to draw attention to a certain bias in the *selection* of material for this paper. Records of urban munificence are in fact (for reasons which I hope to make clear) one of the most common types of inscription we have from Spain. But to concentrate almost exclusively on these records may be to give a false impression that urban munificence was the only sort of communal benefaction there was in Roman Spain, and public building the only sort of building. In reality, people gave money for the celebration of religious cults – such as the cult of Isis (*CIL II*, 3386) – which were not official urban cults; they built substantial private houses for themselves, in town and countryside, at the same time as public building in the towns was expanding thanks to private munificence (Gorges 1979; Knapp 1983, 66). But it is private giving for official urban purposes which constitutes our theme.

Urban munificence in early Imperial Spain

Urban munificence did not begin or persist in a vacuum: it had a cultural, social, and economic background. The cultural background to the development of urban munificence in Spain has briefly been described (above, p. 180ff). Here I should like to point out some necessary (social and economic) conditions for the practice, and to run through some suggestions about donor's motives, before going on to discuss the inscriptions in detail.

It was necessary, first of all, that there should be rich people within reach of a community (usually, but not always, citizens or residents), possessing the sheer ability to spend money on public munificence. (For donors from outside the community, see Mackie 1983, chapter 8). It was also necessary that the community, or individuals within it, should have (or have access to) the relevant architectural awareness and technological skills; and that a great deal of hard work should be put in (by donors, or their heirs, or a community's own officials) to seeing that building programmes, public feasts, entertainments and the like were adequately organized. Urban munificence involved effort (for someone), as well as skills and money: it was not something one embarked upon in a spirit of nonchalance, because one might as well do this with one's money as anything else.

Some motives that have been suggested for munificence are: regard for fellow-citizens, pride in one's town, religious sentiment, desire for power, for posthumous prestige or memory; and of course *philotimia* and its Latin variant *honor* the competitive pursuit of prestige, esteem, a public reputation (eg. Mackie 1983, chapter 7; Johnston 1985,

105-6; Frere 1985; Brown 1978, chapter 2). These are all understandable, and plausible, enough as motives: the question is, how can we see them fitting into a specific practice of urban munificence?

The earliest inscriptions recording urban munificence in Spain belong to the last years of the Republic, and the first years of the Principate. This does not of course mean that there was no urban munificence before then, unrecorded or its records now lost. But certainly the earliest building inscriptions we have record *supervision* of building by local magistrates rather than munificence (eg. *CIL II*, 3425-6 = *ILS* 5332-4; *HAE* 798 with Granados 1984, 270-4 for the date); or else tend to refer to private expenditure on fairly basic sorts of public amenity: perhaps a temple (*CIL II*, 5943, AD 21), gates and accompanying archways built and paid for by an individual at Ilipa (Alcalá del Río) in Southern Spain with a Carthaginian name (*CIL II*, 1087 = *ILS* 5573). From Ipsca (Castro del Río) in the same region (a town which was peregrine until the Flavian period) we have what reads like a self-conscious declaration by the local senate of its own role as recipient and guardian of gifts made to the community. It was inscribed on a statue-base; the year was AD 46:

In the reign of Tiberius Claudius Caesar Augustus Germanicus, *pontifex maximus*, in his fifth year of tribunician power, hailed imperator for the tenth time, *pater patriae*, designated consul for the fourth time, Optatus son of Reburus was the first to give at his own cost a statue of Caesar Augustus, *pater patriae*, and he dedicated it in company with his sons Optatus and Reburus. The senate decreed that it should be among the public possessions (*bona publica*) in perpetuity. (*CIL II*, 1569)

But there was much more to come. In Spain, as elsewhere in the Empire, urban munificence seems eventually to have reached a peak, in quantity and in complexity, during the second century AD. (For caution about inferring a date directly from the quantity of inscriptions, see MacMullen 1982, 242-5). Further, in Spain, epigraphic evidence, in parallel with archaeology, indicates an upsurge in public building and public activity of all kinds as a result of the emperor Vespasian's grant of the Latin right to the peninsula in the seventies AD (Mackie 1983, 125-7 with appendix 3 for Vespasian's grant).

One inscription which may date from soon after the grant comes from the Flavian municipality (*municipium*) of Cartima (Cártama), near Málaga on the south coast:

1) Junia Rustica, daughter of Decimus, first and perpetual priestess in the *municipium* of Cartima, repaired public porticoes which had deteriorated

through age, gave land for a bath, restored public revenues, placed a bronze statue of Mars in the forum, and at her own cost gave and dedicated porticoes next to the bath on her own land, with a reservoir and a statue of Cupid, giving a feast and public shows; the statues voted to herself and her son Caius Fabius Junianus by the council of Cartima she made and gave at her own cost, remitting the expense, also a statue to her husband Caius Fabius Fabianus. (*CIL II*, 1956 = *ILS* 5512)

The next (slightly damaged) inscription probably belongs to the late second century AD, and comes from Porcuna, a town which lay just off the via Augusta leading from the southern province of Baetica northwards into Tarraconensis:

2) (Quintus?) Quintius, son of Quintus, grandson of Quintus, great-grandson of Quntius, great-great-grandson of Quintus, of the tribe Galeria, Hispanus... aedile, *flamen*, *duovir* and *pontifex* of the *municipium*...procurator of the river Baetis (a list of other posts in the imperial administration follows) diffusely honoured with numerous immunities and benefits...by emperors, gave as a gift at his own cost shops and a granary on land which he bought from the community. (*CIL II*, 2129 = *ILS* 1404)

Less ostentatious is the following, from Ilugo (Santisteban del Puerto) across the border in the province of Tarraconensis, near the mining district of Cástulo (Linares):

3) Annia Victorina, daughter of Lucius, in memory of her husband Marcus Fulvius Moderatus and her son Marcus Fulvius Victorinus, built a water-supply entirely at her own cost, constructing bridges and pipes and pools with ornaments attached, and dedicated it, giving a feast. (*CIL II*, 3240 = *ILS* 5764)

These three inscriptions might have been chosen virtually at random: they serve here to illustrate several points about urban munificence. In the first place, the inscriptions show a range of individuals as benefactors: two women, one an official priestess of the community, one with no official position, so far as one can tell; and a man who was at one point a councillor, magistrate, and priest of the community which receives his benefaction, but has since that time risen high in the financial branches of the imperial administration. Secondly, we can see the scope and scale of munificence: although no figures are stated, none of these gifts will have been inexpensive, and from Junia Rustica's repairs to public porticoes through to the feast mentioned at the end of the last inscription, these donors have been responsible for an immense range of public amenities and activities. Munificence could change the face of a town. (For further details of munificence

and its costs in Spain, see Curchin 1983).

Thirdly, the inscriptions show, or suggest, a number of different motives at work, even within each individual case of munificence. It may be observed to begin with that the gifts described were variously pleasant, useful, and profitable to the communities concerned. For example, shops brought in money, in the form of rent, to the public funds; a water-supply need not be purely functional, but could have agreeably decorative features too (as was evidently the case with that built by Annia Victorina). (It is perhaps significant that baths and systems of water-supply were one of the most popular forms of urban benefaction in Spain. For functional and aesthetic aspects of Roman water-supply systems, see Frontinus 1982). Were the donors, then, guided solely by the knowledge that they were making local residents' lives easier and more pleasant?

This is a genuine question, not a rhetorical one. The reason why it cannot be answered in the affirmative is not so much that there must have been 'something in it' for the donors (although naturally there was, if it was only self-satisfaction), as that 'making local residents' lives easier and more pleasant' is an explanation which fails to do justice to the complexities of the problem. For example, why should donors have chosen to make life easier and more pleasant for *these* people (why not spend money on a village, or a particular social class, or members of one's own family)? Why should money have been spent in this style, and on this scale, in Spain during the early Roman Empire, and not in all societies with a similar distribution of wealth, and comparable technological skills? Why did Spanish donors have to write down what they were doing: why could they not just do it?

If one wants to understand people's behaviour, it seems logical to look, not just at their behaviour in isolation, but also at the response. The first of the three inscriptions, recording the munificence of Junia Rustica, priestess of Cartima, at the same time records a response: the town council voted statues to herself and her son, which in the event she set up at her own cost. These may be termed 'honorific' statues; the practice whereby the council voted a statue, and the person thus honoured paid for it, was so common as to warrant a special abbreviated formula in inscriptions: 'h(onore) a(ccepto) i(mpensam) r(emisit)' ('s/he accepted the honour, and remitted the expense') (*CIL II*, Index, p. 1176). Other ways of conferring *honor* on public benefactors were the acclamation 'patron' (*patronus* – *CIL II*, 1054), and appointment to public magistracies or (especially) priesthoods. Consider this statue-base:

Augustan Fortune. ...daughter of Lucius, Celerina, having twice previously

feasted the public, on account of the *honor* of her priesthood, gave and dedicated this from 100 pounds of silver, giving a feast. (*CIL II*, 1278)

Evidently what is described here is not a fixed or standard charge (cf. Duncan-Jones 1962; Mackie 1983, 93). How 'voluntary' the payment really was, in the circumstances, is not here at issue: the point to notice is that public authority, a public position, was itself conceived of as a variety of *honor*, and it was this that made appointment to public office an appropriate exchange for munificence. (One might compare the epigraphic formula, 'having discharged all *honores* in his community', where *honores* refers to public magistracies, and probably priesthoods as well (*CIL II*, Index, p. 1167; Mackie 1983, 50 note 8).

The language of the inscriptions can help us to map out the varied aspects of the Spaniards' concept of *honor* (similar, but not identical to our own concept of 'honour'), and its place in the practice of urban munificence. The appearance of the term in these (Latin) inscriptions gives rise to a suspicion that regard for honour, in the particular shape in question, was imported to Spain along with the language in which the inscriptions were written. This is not to deny that Roman *honor* may have corresponded, to some degree, with pre-existing social values (cf. Drinkwater 1983, 142). At any rate, the Roman concept appears, in strikingly recognizable form, in this altar-dedication, from northern Portugal, to the native spring-god Bormanicus (on whom see Blázquez 1970, 67): '...you who pursue *honor*, whoever you are, may your glory keep you; and tell your child not to scribble on this stone' (*CIL II*, 2403 = *ILS* 4514b).

Once one has identified the presence of *honor* as a response to munificence, regard for *honor* emerges clearly from what the donors in inscriptions (1)-(3) say about their activities, and the use they make of the inscriptional mode of communication. All three donors give what is in effect an itemized account of their munificence, and place emphasis on 'giving at their own cost'. This reflects, not just a feeling that it is a shame to be generous and not get the credit for it, but also the conception of *honor* as attached to the sheer ability to spend large sums of money which appears in the emperor Augustus' own *Res Gestae*. In (1) and (2), the inscriptions recording the gifts function as a vehicle for advertising the donors' *other* claims to *honor*. Junia Rustica is 'first and perpetual priestess in the *municipium* of Cartima'; Quintius Hispanus is a local citizen who has made good in the imperial service, and spells out his success in the process of recording the gifts which are concrete symbols of his achievement. Finally, all three donors went to the trouble of cutting an inscription: why?

Cutting an inscription, in these three cases, implies a desire for

contemporary esteem and/or a memorial: the donors had an (indefinite) audience in mind. In (3), Annia Victorina explicitly refers to commemoration as a motive for the gift ('...in memory of her husband..'). This leads us to the question whether the inscriptions we have are in fact representative of urban munificence as it was practised in Roman Spain. It is possible that the donors we know about constitute only a select type: the ones who cared especially about esteem and commemoration. Other people may have made the same sort of gifts, equally lavishly, to Spanish communities, but have failed to record the fact because their motives and preoccupations differed from those of the donors we have discussed.

There are, from Spain, very few inscriptions which explicitly refer to altruistic care for the community as a motive for munificence; and none (to my knowledge) which refers to such a motive on its own. This inscription, from the island of Ebusus (Ibiza), is remarkable for its other-regarding tone:

...he left 90,000 sesterces to the community of Ebusus so that, from this sum, taxes should be paid annually to the Romans and the citizens not be obliged to pay taxes in difficult times, the remaining 6,000 to be lent out and the interest used for annual games, with lights (?), on his birthday, the fifth... (CIL II. 3664 = ILS 6960)

Notice that the man is anxious to have his own birthday commemorated, as well as to relieve the citizens of financial pressures; also that there was a special point in recording the phrase about paying taxes 'in difficult times' (on which see Duncan Jones 1964, 201-3), that is, in order to ensure that the testator's wishes were carried out.

I would infer, neither that there was large-scale, and silent, giving from people who cared nothing for esteem or commemoration; nor that the impression the inscriptions give us as to the donors' motives is the whole story. Cutting an inscription is not the same thing as making a gift, and that the inscriptions should give undue emphasis to the pursuit of public esteem rather than to more altruistic motives is just what we would expect. On the other hand, the communities' own reactions to munificence reveal a close association between munificence and *honor*; an association which donors could not have escaped even if they wanted to, and which was fundamental to the *practice* of urban munificence (if not necessarily central to each individual case of it). In early imperial Spain, public esteem was habitually bestowed on people who spent large sums of money, visibly and personally, on urban amenities; and (as the tone of the extant inscriptions shows) openly to pursue public esteem by such expenditure was considered unexceptionable. In these respects, the

evidence from Spain echoes evidence for other areas of the Roman Empire, East and West (eg. Brown 1978, chapter 2; Johnston 1985); and this association between *honor* and munificence goes some way towards defining and explaining what was going on. Giving to the community, and receiving *honor* in return, was something that one did; and it was also a practice that supplied donors in general with powerful motivation. As to the *origins* of the practice in Spain: we could call urban munificence simply a cultural accretion, or, more subtly, locate its origins in the arrival of a new language and a new conceptual scheme. But neither explanation on its own can explain why *this* (alien) practice should have gained ground and flourished. It is to a more specific explanation that we shall turn in the next section.

The dynamics of honour and power

Urban munificence, at its height, pervaded the life of the towns, in permanent and temporary, visible and invisible, forms. For us, it is the physical relics of the practice – the inscriptions and remains of buildings – which appear as its foremost manifestations. We tend to give less than full weight to the feasts, the entertainments, the distributions of money about which the inscriptions tell us. We forget that council-chambers, temples, theatres, circuses, baths, a water-supply, were not just built to be used, in that order: in many cases, these constructions must have been a secondary response to a felt need for the relevant activities. From the donor's point of view, the practice accommodated, and was sustained by, many different motives: the motives of *honor*, of commemoration for oneself and others, the pleasantness, usefulness, and religious significance of the objects of expenditure themselves. There was also, perhaps, a question of pride in one's community, a community that was becoming, not merely agreeable to live in, but Roman. (For pride in the *Romanitas* of one's community, see for example *CIL II*, 1955, where a man's friends have arranged for a statue to be set up of him, 'the first Roman *eques* from the community of Cartima'). The common factor, in all cases, was personal expenditure, of which the community was the beneficiary, the channel, and the focus.

If one wants to understand urban munificence in Spain, not just as the mature and established practice it eventually became, but also as an embryonic practice progressively taking hold from the beginning of our era onwards, the key perhaps lies in the particular processes by which the exchange of *honor* and munificence was managed. The *honor* which accrued to donors was both generalized (esteem,

gratitude, in the community) and specific (*honor* in the shape of a public statue, appointment to a public position, and so on). In its specific forms, *honor* lay largely in the gift, not of citizens or residents in general, but of the local council, the *senatus* or *ordo*. Making appointments, voting public statues, permitting others to set up statues in public places, conferring the title *patronus*, granting public funerals, the local council appears in inscriptions as the dominant source and controlling body for specific *honores* of all kinds (Mackie 1983, chapter 5; *CIL II*, Index, pp. 1162-5).

The actual money which local councils had at their disposal was limited. The convention whereby individuals repaid the cost of public statues (and public funerals) voted by the council indicates a system of public administration fundamentally geared to private contributions (*CIL II*, Index, p. 1176). Public funds in Spain relied on scattered and sometimes unpredictable sources of revenue, for example rents and fines; standard cash payments for office (*summae honorariae*) are barely attested; power to raise local taxes was restricted by the Roman government (Mackie 1983, chapter 7). The fact that Spanish inscriptions overwhelmingly report private rather than public expenditure probably reflects something more than a bias in the epigraphic record. (For substantial buildings, recorded in inscriptions, from public funds in Africa, see Duncan-Jones 1985). The council's own currency can be seen as *honor* rather than cash: *honor* which tempted, and duly rewarded, the munificence of those who could afford to pay for public amenities.

Just as examination of the specific forms and sources of *honor* leads us to the local council's powers and responsibilities, so examination of the process of giving points in the same direction. Urban munificence benefited everyone (more or less) in the community; the honour that rewarded it, generalized or specific, was public honour, its theoretical source being the community as a whole. But, as a public practice centred on the community, urban munificence was beset with practical, legal, and political complications. Specific public honours to benefactors had to be assigned and controlled. And, on the other side of the balance, someone had to accept a gift on behalf of the community; to see to (or be responsible for neglecting) the maintenance of buildings; to administer funds left to a community for perpetual benefactions. The right of towns throughout the Empire to accept legacies had to be established in law (cf. Johnston 1985). In all of this, the figure of the council looms large; and behind it the figure of the Roman government itself, regulating, extending, and clarifying the respective rights of communities and their benefactors.

‘If anyone has promised to embellish with marble a building constructed by someone else...’ We revert at last to the situation with which this paper began. When the senate of the peregrine Ipsca accepted a statue of the emperor Claudius, and declared that it should be ‘among the public possessions in perpetuity’ (above, [p. 184](#)), it was setting the community on a path towards a situation where local munificence would be exhaustively and meticulously circumscribed by Roman lawyers, in treatises applying Empire-wide. In gifts of land for building to communities – such as the land given to Cartima by the priestess Junia Rustica for a bath (above, [p. 184](#)) – we can see the responsibilities of communities, and so of local councils, literally expanding before our eyes.

As a final clue to why it all happened, I should like to appeal to the evidence of the Spanish town charters: in particular the charters of the Flavian period, which appear ever more compellingly to have come as a routine follow-up to the Latin right granted by Vespasian (see Mackie 1983, appendix 4; and for recent developments González 1986). The powers and activities of local councils, as prescribed in the charters, were no less pervasive than the practice of urban munificence itself. The following are excerpts (not all directly related to urban munificence) from the Flavian charters of Imi and Malaca (quoted at length by González 1986):

- §19 (The aediles) are to have the right and power of managing the com-supply, the sacred buildings, the sacred and holy places, the town, the roads, the districts, the drains, the baths and the market...and of seeing to and doing whatever else the council decides is to be done by the aediles...
- §62 No one in the town of the *municipium*... or where buildings are continuous with the town, is to unroof or destroy or see to the demolition of a building, except by resolution of the council...
- §73 The scribes who are to write and prepare the common records, books and accounts in that *municipium*, whom the majority of the council of that *municipium* have approved...
- §76 A *duovir* of the *municipium*... each in his year, is to raise with the council of that *municipium*, when not less than two-thirds are present, whether it is to be decided that the territories and fields and sources of revenue of that *municipium* are to be visited and inspected that year...

The practice of urban munificence in Spain required that local councils have wide-ranging powers and responsibilities: the power to confer *honor*, the power to accept and manage benefactions, and all the administrative responsibilities that these powers brought in their train. It required, in short, that councils have the sort of role in the community that the charters prescribe. The upsurge in urban munificence in Spain from Vespasian’s reign onwards can be seen as

having had some precise legal and practical causes. It was not just a self-conscious reaction, by the towns and their citizens, to a new 'Romanized' status; it was also facilitated and stimulated by contemporary definitions of governmental authority.

But the development of urban munificence was a two-way process, in which the initiatives and ambitions of benefactors, as well as definitions of authority, played a part. Private giving, and public responsibility, went hand in hand: the one depended on the other, and stimulated the other. Already, before Vespasian's reign, gifts such as the one at Ipsca had been encouraging local councils to extend their responsibilities; from the Flavian period onwards, benefactors continued to exploit, and to stretch, the authority of the institutions which acted on the community's behalf. Munificence helped to create its own market; the reward of honour was inflated by the council's expanding power.

Conclusion

'Romaniser c'est municipaliser en même temps qu'urbaniser'. Among the surviving Romano-Spanish inscriptions, the two most numerous types are epitaphs, on the one hand, and records of urban activity, especially urban munificence, on the other. This is no accident. People inscribed things on stone to be noticed, and to be remembered. If the evidence of inscriptions is treated without caution, the proportion of records of munificence can (like the proportion of epitaphs) be misleading: people did a great many other things as well, about which the stones, for the best and most logical of reasons, fail to inform us. But records of munificence do at least bear witness to a widespread practice which contributed both to urban development, and (because of the cultural implications of munificence) to the spread of a 'Roman' lifestyle as a broader phenomenon. This practice consisted essentially in private expenditure for the sake of honour, which was directed towards the local community, and which – through the administrative strength of the community's institutions – was welcomed and rewarded with formal public esteem. The practice had many conditions and causes, among which can be numbered familiarity with Roman technology, architectural styles, and amusements; the presence of economic élites anxious to pursue *Romanitas*; and the Roman government's idea of provincial order, which led it to recognize and (at least) protect local government on the urban model. But, of the structural causes of urban munificence, the most significant appears to have been the dynamic coherence that existed between this practice and the model of local government prevailing in the Roman provinces.

‘It is as if the whole world were celebrating a festival’, wrote the Greek Aelius Aristides in the second century AD. ‘Everywhere is full of gymnasia, fountains, monumental gateways, temples, workshops, schools; and one can say with full knowledge that the world, which has been in distress since the beginning, has been brought to health’ (*Panegyric on Rome*, 97-8). Spain itself participated in this communal festival of East and West. It was – if occasionally idealized, then and now – a remarkable state of affairs, and it did not come about because ‘native’ succumbed to a package called ‘Romanization’.

This paper has not been concerned, except peripherally, with the issue of Roman imperialism: how much, and how consciously, the Romans wanted an empire, and why; and to what lengths it occurred to them to go in order to secure one. But whatever the motives of imperialists, considered in isolation, it is at least true that there are some imperial structures which are better geared to survival than others. I would suspect that -in contrast to modern empires where the idea of self-government has been at war with imperialism, the idea of assimilation with the maintenance of a central power (Hargreaves 1979, 3-23) – the Roman Empire owed much of its astonishing durability to a constructive collaboration, over time, among its various social, political, and administrative ideals and practices. Urban munificence in Roman Spain is a small but relevant part of the story.

Notes

- 1 Editorial note: Nicola Mackie died in tragic circumstances on 9th August 1988. We publish here her paper as submitted soon after the Canterbury Conference. It is a fine tribute to an outstanding scholar who is much missed.

References

- Alarcao, J. and Etienne, R. 1977-9 *Fouilles de Conimbriga*, 7 volumes, Paris: de Boccard
- Alföldy, G. 1975 *Die römischen Inschriften von Tarraco*, 2 volumes, Berlin: de Gruyter
- Beltrán, A. and Tovar, A. 1982 *Contrebia Belaisca I*, Zaragoza: Universidad de Zaragoza
- Blázquez, J. M. 1970 ‘Las religiones indígenas del área noroeste de la península ibérica en relación con Roma’, in *Legio VII Gemina*, 63-77. León: Diputación Provincial
- Brown, P. 1978 *The Making of Late Antiquity*, Cambridge Ma.: Harvard University Press
- CIL II* = Hübner, E. (ed.) 1869-92 *Corpus Inscriptionum Latinarum* Vol. II with supplement, Berlin: Reimer
- Curchin, L. A. 1983 ‘Personal wealth in Roman Spain’, *Historia* 32, 227-44
- Domergue, C. 1973 *Baelo I*, (Publications de la Casa de Velazquez, Série Archéologie

Fasc. 1). Paris: de Boccard

Drinkwater, J. F. 1983 *Roman Gaul*, London: Croom Helm

Duncan-Jones, R. P. 1962 'Costs, Outlays and *Summae honorariae* from Roman Africa' *Papers of the British School at Rome* ns 17, 47-115

Duncan-Jones, R. P. 1964 'Human numbers in towns and town-organizations of the Roman Empire: the evidence of gifts' *Historia* 13, 199-208

Duncan-Jones, R. P. 1982 *The Economy of the Roman Empire: Quantitative Studies*, second edition, Cambridge: Cambridge University Press

Duncan-Jones, R. P. 1985 'Who paid for public buildings in Roman cities?' in Grew, F. and Hobley, B. (eds.) *Roman urban topography in Britain and the western Empire*, 28-33. London: Council for British Archaeology

Frere, S. S. 1985 'Civic pride: a factor in Roman town planning' in Grew, F. and Hobley, B. (eds.) *Roman urban topography in Britain and the western Empire*, 34-6. London: Council for British Archaeology

Frontinus 1982 Frontinus-Gesellschaft e.v. (ed.) *Wasserversorgung im antiken Rom*. Munich: Oldenbourg

Gagé, J. 1964 *Les classes sociales dans l'Empire romain*, Paris: Payot

García y Bellido, A. 1967a *Les religions orientales dans l'Espagne romaine*, Leiden: Brill

García y Bellido, A. 1967b 'La Latinización de Hispania' *Archivo Español de Arqueología* 40, 3-29

González, J. 1986 'The Lex Irnitana: a new copy of the Flavian Municipal Law', *J. Roman Stud.* 76, 147-243

Gorges, J.-G. 1979 *Les villas hispano-romaines*, Paris: de Boccard

Granados, J. O. 1984 'La primera fortificación de la colonia Barcino' in Blagg, T. F. C., Jones, R. F. J. and Keay, S. J. (eds.). *Papers in Iberian Archaeology*, 267-319. Oxford: B.A.R.

HAe 1950- *Hispania antiqua epigraphica: Suplemento anual de Archivo Español de Arqueología* Madrid: C. S. I. C.

Hargreaves, J. D. 1979 *The End of Colonial Rule in West Africa* London: Macmillan

ILS Dessau, H. (ed.) 1892-1916 *Inscriptions Latinae Selectae* 3 vols. Berlin: Weidmann

Johnston, D. 1985 'Munificence and *Municipia*: bequests to towns in classical Roman Law', *J. Roman Stud.* 75, 105-25

Knapp, R. C. 1983 *Roman Córdoba*, Berkeley: University of California Press

Mackie, N. 1983 *Local Administration in Roman Spain AD 14-212*, Oxford: B.A.R.

MacMullen, R. 1982 'The Epigraphic Habit in the Roman Empire' *American J. of Philology* 103, 233-46

Mann, J. C. 1985 'Epigraphic Consciousness' *J. Roman Stud.* 75, 204-6

Richardson, J. S. 1986 *Hispaniae: Spain and the development of Roman imperialism 218-82 BC*. Cambridge: Cambridge University Press

Villaronga, L. 1973 *Las monedas hispano-cartaginesas* Barcelona: Círculo Filatélico y Numismático

Villaronga, L. 1984 'Las primeras emisiones de monedas de bronce en Hispania', in Blagg, T. F. C., Jones, R. F. J. and Keay, S. J. (eds.) *Papers in Iberian Archaeology*, 205-215. Oxford: B.A.R.

Wiseman, T. P. 1983 '*Domi nobiles* and the cultural élite', in *Les 'bourgeoisies' municipales italiennes aux IIe et Ier siècles avant J.-C.*, 299-307. Paris: C.N.R.S.

Section IV

Cultural and Social Change

Whilst there has been a widespread acknowledgement of the social and cultural changes which characterize Romanization, until recently there has been little detailed exploration of how religion, art and architecture were used as active ingredients in the processes rather than simply as passive reflections of them. The three papers in this section examine ways in which different aspects of social and cultural change in Gaul and Britain are illuminated by these data.

Blagg looks at housing, which provides a wealth of information about patterns of social change. He argues that houses provide a more valuable barometer than contemporary public buildings since they had to satisfy the living needs of their inhabitants as well as displaying their *Romanitas*. Roman architectural forms allow valuable comparisons to be made between town and country, and between different regions, whilst the morphology of the buildings may be a key to social structure. Romanized buildings appeared first in the countryside where, besides the major villas which, with their Mediterranean-type layouts, allowed public ceremonial display, there are also more basic corridor houses together with larger linear buildings apparently for multiple occupancy. The towns show a less elaborate development of housing before the second century AD with the buildings more appropriate to urban artisans rather than a social élite. When the towns are provided with more elaborate houses, their forms are similar to those of the villas, implying occupation by the same social group who were new to the towns.

Drinkwater sets out to examine whether or not the Gauls benefitted from incorporation into the Empire, bearing in mind the losses of both freedom and indigenous culture that this involved. He outlines the economic benefits and the opportunities for social advancement which accrued from the *Pax Romana*, but contrasts this with the subjugation of the natives. To illustrate this, he takes Vertet's argument that

Central Gaulish pipe-clay figurines of goddesses symbolized native powerlessness and resignation to Roman rule. Drinkwater proposes an alternative view of their iconography as suggesting more positive and beneficial aspects of Rome's new order in Gaul.

King's paper is concerned more directly with the nature of Romano-Celtic religion. He sees religion as a vital and active ingredient in the processes of social and cultural change, rejecting its separation from other aspects of Romanization. Since archaeological evidence all pertains to ceremonial rather than belief, he examines the emergence of the related phenomena of Romano-Celtic temples, cult images and dedicatory inscriptions in relation to the core-periphery models some use to explain cultural change. It is shown that there were differing patterns of regional development resulting from the varying histories of cultural contact, particularly with the Greeks, although there were also common La Tène III precursors. Only dedicatory inscriptions can be seen as an essentially Roman introduction. The evidence of Roman policy to the Druids is used to question the extent to which their attitudes to native religion were truly *laissez-faire*. He concludes that there was a deliberate policy over religion which included associating the Imperial Cult with the worship of Celtic deities. In the synthesis resulting from Romanization, Celtic cults lost the separate identity of their ceremonial forms, though not necessarily their beliefs. The resulting regional patterns are shown to provide a valuable index of Romanization and useful insights into the processes of cultural change.

13. First-century Roman houses in Gaul and Britain

by T.F.C. Blagg

An examination of the earliest Roman houses in the north-western provinces is not straightforward. For one thing, many 1st-century AD Roman sites, both urban and rural, continued to be occupied in later centuries. Consequently, few 1st-century houses have survived without being much altered by later buildings, and the archaeological evidence for them is more fragmentary and difficult to use. Those who have made general studies of Roman houses in the provinces have naturally tended to concentrate on the more fully developed and better preserved examples, mainly of the 2nd century and later (McKay 1975; Percival 1976; Ward-Perkins 1981). This tendency has allowed earlier buildings to be seen mainly as simpler and less evolved manifestations of Roman provincial building methods, representing the initial stages in rectilinear planning, whether of timber beam or mortared stone construction, and of furnishing with *opus signinum* or mosaic floors, hypocaust heating and painted wall-plaster. In this, they may constitute the beginning, either of the particular evolution of a structure (e.g. the villa at Gorhambury: Neal 1978), or of the general evolution of a site (e.g. that of Verulamium from the timber structures of the pre-Boudiccan town to the courtyard houses of the late-3rd and 4th-century 'first-class classical city': Frere 1983, 7-23). Buildings which were large and ambitious from the start, like the Fishbourne houses, do not of course fit into this pattern, except with the hindsight which can regard them as anticipating later developments. If, however, we consider types of housing not just in architectural terms, but also as reflecting the social institutions of those who lived in them, then those of the 1st century should be of particular interest for what might be deduced from them about the variety of social response to the Roman conquest, in a period when alternative directions and changes of direction may be observed. This will involve a comparison between urban and rural sites from a standpoint rather different from the studies of the later relationship between town and country, in the

period after the towns had become fully established (cf. Fulford 1982; Millett 1982).

Although it has long been noticed that among the main types of Romano-British house, those with corridors and courtyards as parts of their plan, 'no special type of town-house occurs' (Haverfield 1923, 40), studies of Roman domestic architecture in Britain, and in other provinces too, have tended to observe in practice a distinction between houses in the country (i.e. villas) and houses in the towns. Villas have been considered in regional groups, as those of a whole province, or a part of it. Town houses however have not usually been so grouped, but have normally been treated as one aspect of the architectural remains of the individual town to which they belonged. Villas seem to have been regarded as the more interesting, if the number of books or conferences on them is anything to go by (e.g. Rivet 1969, Percival 1976, Todd 1978). In part, this may be because it has been more fashionable in recent years to concentrate on socio-economic functions, i.e. villas as farms, rather than on their morphology and their domestic (and also social) function as houses (cf. Slofstra 1983, 84). One exception to these generalisations is the paper by Walthew (1975) on the town house and the villa house in Britain, in which he drew attention to the similarities which suggested that the *developed* form of town houses appeared to derive from the planning of villas. Very little of the evidence which he used was earlier than the 2nd century, and for the 1st century, rather a different picture may be suggested.

It was, in the first place, a period of striking innovation in domestic architecture. In Britain, the main difference between houses in the late pre-Roman Iron Age and those typical of the Roman period is not merely formal, in that the former were mainly circular and the latter rectangular in plan (though cf. Rodwell 1978), and that in Roman housing a different range of constructional methods and building materials was employed. There is also a fundamental difference between them in their organization of interior space. With the increase in knowledge of Iron Age houses from the excavations of hill forts and farmstead sites during the past twenty years, and with the insight derived from experimental reconstructions, notably at Butser (Reynolds 1979), it is now more widely accepted that Iron Age houses could be large and impressive structures, the product of accomplished skills in construction, and representing some elaboration in social organization. Nevertheless, there is as yet little sign of systematic internal divisions within these houses of the kind which would reflect a hierarchy in social custom or a differentiation in domestic function.

That is, in the design of the house, separate parts are not set in compartments aside from the rest in order to accommodate individuals or groups of different status within the household, or for such particular activities as cooking, eating, entertaining guests or sleeping. Some rectangular late Iron Age houses on continental sites, e.g. the oppida of Manching, Mont Beuvray and Villeneuve-Saint-Germain (Collis 1984, 109-17 and 130) and the farmstead at Verberie (Agache 1978, 92 and 180), have lines of internal posts which might have represented partitions. Although some of the British rectangular buildings had similar internal posts (Rodwell 1978, 29-33, Figs. 2.15, 2.19, 3.3, 3.4b), it is not certain that they functioned as houses. Even in circular houses, it is possible that parts of the peripheral area, between the walls and the roof posts, might have been screened off. All this, however, is not more than slight or hypothetical evidence that British Iron-Age houses had the systematic divisions which are characteristic of even relatively modest-sized Roman-style houses. Even if we are usually unable to identify the functions of the rooms of an excavated Roman house, their number and variety may be significant in themselves.

In his contribution to this volume, Trow makes the point that in Britain in the immediate post-conquest period architecture was an obvious new medium in which to express the status and the favourable relations with the occupying power held by those members of the native élite whose authority had survived the transition to Roman rule. He also notes that luxurious romanized structures began to appear more rapidly on rural sites than in towns. Both points are relevant to the evidence which will be examined in this chapter. In relation to the first, there was conspicuous display in public architecture, in forums, basilicas, temples and theatres, of a kind which was identical with the munificence of the élite of Roman Italy during the late Republic. The benefaction of public building in return for *honor* could be sheer ostentation, but it is less credible that private domestic architecture in the Roman manner should have been nothing more than display. However splendid and luxurious, a house is still, in le Corbusier's phrase, a machine for living; even when Nero remarked of his extravagant Golden House in Rome, 'that he was at last beginning to live in human conditions' (Suetonius, *Nero* VI.2), the exaggeration has point only because of its core of truth, that Nero did live there.

The proposal that architecture was selected after the conquest as a medium for expressing the status of the Romanized élite is as relevant to Gaul as it is to Britain, as King also observes (this volume, 231)

with reference to temples. For Gaul we have a little more historical information than we do for Britain about the native aristocrats concerned. References to villas in Tacitus' accounts of the revolts of Julius Sacrovir in AD 21 and Julius Civilis in AD 69 provide evidence of a circumstantial kind. Sacrovir, an Aeduan nobleman, after his defeat in battle fled first to Autun and then to a nearby villa, where he killed himself, after which the house was set on fire (Tacitus, *Annals* III, 46). Civilis, who also had Roman citizen status and was an auxiliary cohort commander as well as being a Batavian of royal lineage, is said to have had his lands and villas spared from the ravaging of Batavian territory by order of the opposing Roman general Petillius Cerealis (Tacitus, *Histories* V, 23). The term used is *villa*, contrasting with Caesar's description of the properties which he saw in the British countryside simply as buildings: 'creberrimaque aedificia fere Gallicis consimilia' (*De Bello Gallico* V, 12, 3). From his use of the word, Tacitus, as an educated metropolitan Roman, evidently knew, or if not could plausibly assume, that these Romanized Gauls lived in country houses of the kind appropriate to Roman landowners. So far as concerns the Batavians, there is little archaeological sign of rural Romanization, but this may not be surprising, considering the probably rather exclusive nature of the tribe's military élite, (cf. Bloemers, this volume, 74ff.).

Wightman has suggested (1985, 105) that roughly one half of the villas in Belgica were built in the second half of the first century AD (see also Haselgrove, this volume, 52ff.). The archaeological evidence for first-century villas is varied, however, and can be complex to interpret. This may first be illustrated by the Belgian site of Haccourt (de Boe 1974). Initially there were two phases of timber post-hole construction, the first of which was late Iron Age, possibly immediately post-conquest, the second approximately mid-1st century AD. After that date, and probably towards the 70s AD, according to the pottery evidence, the first masonry villa was built. A column capital found in the destruction debris suggests a house of some quality, but all that remained of the structure was a cellar, aligned slightly differently from the Period II house, the terracing for which had removed the rest of the earlier structure, some time before the end of the 1st century. The period II house consisted of a range of a dozen rooms, several of them very long and narrow (1.6 – 2.6m), with a corridor along the north side (Fig. 13.1). The bath suite was later converted to residential use, replaced by smaller baths, and a south corridor was added, before the whole building was demolished and an enormous new villa was built over it in the first half of the 2nd

century. The furnishings of the late 1st century house were relatively simple, with earth floors and little evidence of wall-plaster, except in the baths. The linear arrangement of rooms, lacking a central architectural focus, suggests a fairly egalitarian household, not one which needed a reception room for *clientes*, for example.

In relation to the overall development of the villa, de Boe (1974, 41) has commented that, given the relatively uniform distribution of villas in the region (62 sites are known in an area of 95 km² west of the Meuse), there was little to indicate Haccourt's future great development. He inferred that the distribution implied a degree of social uniformity and exploitation of what had previously been public or communal land, rather than a clustering of tenants on the estate of a great landed proprietor. Nevertheless, it should be noted that there is no evidence of centuriation, the site is not close to a Roman *colonia*, and there is no particular reason to suppose the imposition of a Roman superstructure on the pattern of occupation, rather than a native adaptation. On the other hand, Haccourt was presumably in the territory of Tongeren (Tongres), and Bloemers (this volume, 83) notes the difference between the sleeper-beam construction of Claudian buildings there and the typical groundplans of native farmsteads, as well as the dislocation of the proto-urban settlement which Tongeren's development involved. One problem of interpretation is not knowing how many of the 62 villa sites were in contemporary occupation, especially in the century prior to Haccourt's Period IV large-scale rebuilding.

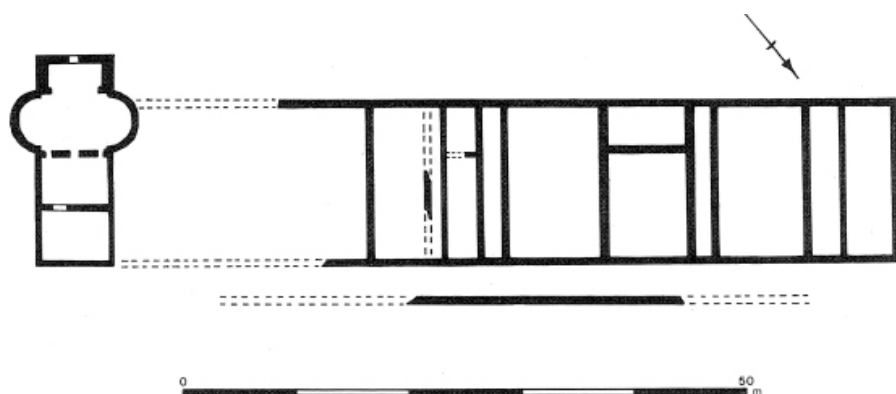


Fig. 13.1. Haccourt, the Period II villa.

The same problem applies to understanding the villas in the Somme region, where Agache's work (1978) has added enormously to our

knowledge of Roman rural occupation in the area. Although few of the sites have been explored by excavation, an appreciable number of those excavated originate in the 1st century. Few, however, have a demonstrable relationship to pre-Roman occupation. Port-le-Grand, near to an Iron Age farmstead enclosure, is the only example in Agache's survey of such a juxtaposition (1978, 368). Allowing for the possibility of selectivity in the conditions for the aerial detection of different types of site, there still seems to be a substantial change in the preferred location of sites, with native-type farmsteads along the valleys or on the heights overlooking them, and villas on the plateaux. Agache reminds us that some at least of the native farms continued to be occupied into the 2nd century (1978, 368). Nevertheless, there is the phenomenon of grand villas built on rich if heavy land previously unoccupied. At the large villa of Estrées-sur-Noye, for example, the excavations have produced no pottery earlier than Roman (Fig. 13.2).

Wightman (1985, 111) has drawn attention to the important point that there were some villas which did not grow from simple comfort to luxury, as Haccourt did, but which were luxurious from the start. Echemach is an early example, dated to Nero's reign, a palatial establishment with marble-veneered central room, baths, and wings flanking an ornamental pool. A striking feature of these houses is the elaboration of their layout and particularly, as at Estrées-sur-Noye, the symmetrical relationship of the villa and its subsidiary buildings along a central axis. This is not a very notable feature of Italian villas, though somewhat reminiscent of the seaside villas in Pompeian wall-paintings. It is, however, a dominant feature of the layout of Gallo-Roman religious sanctuaries, e.g. Ribemont-sur-Ancre (Somme) (Cadoux 1984), where the ancillary buildings form an avenue and the theatre and the baths lie on the central axis leading up to the temple on its hill. This symmetry of arrangement grandly imposed on a rural setting is also characteristic of some of the late Republican religious sanctuaries of central Italy. Walthew (1982, 229) has suggested that in northern Gaul, the religious sanctuaries rather than the towns were the formative sites for public monumental architecture (though cf. Drinkwater 1983, 190-1). In Picard's view (1983) these *conciliabula* were the product of the patronage and benefactions of the great Gallo-Roman landowners (see also Drinkwater, this volume, 217). Luxury 1st-century villas may reflect the same planning concepts as the sanctuaries, as Agache has already suggested (1978, 410), representing a particular choice of what architecture in the Roman manner was supposed to look like; in Picard's words (1983, 421) 'une romanisation mitigée'. The orthogonal layout of some late Iron age

settlements in the Aisne valley, e.g. Condé and Beaurieux (Haselgrove, this volume, 48) may be relevant to the sort of choice which was made.

In Britain, this axially symmetrical planning is not a marked feature of religious sanctuaries (Blagg 1986). Nor would it seem clearly demonstrable on early villa sites. It has been claimed for the villa at Rivenhall (Rodwell 1985, 41-5), but the case depends on a geometry in which several of the constituent features are conjectural, and there are doubts about the 1st century 'proto-villa' which in any case was not necessarily on the same alignment (Millett 1987). While this type of axial planning might have influenced the layout of some more modest sites (e.g. Gorhambury), it is much less obvious than in Gaul. By contrast, some of the earliest villas in Britain follow a different model of regular Roman planning, the square courtyard.

The finest known so far is the so-called proto-palace at Fishbourne dated to AD 65-70 (Fig. 13.3: Cunliffe, 61-69). The excavated part consists of three main elements: a courtyard, surrounded on its north, east and west sides by corridors of between 2 and 3 metres in width; a bath suite comprising at least eight rooms; and a range of rooms at least 52 metres in extent along the east side of both the courtyard and the baths. The walls of the baths are likely to have been of masonry, but the superstructure of the northern part of the house appears to have been clay, rendered in painted plaster. Little is known about the arrangement of the residential rooms, but it is clear that the house was magnificently decorated. It had Corinthian columns of a size indicating probable use in an atrium or entrance porch, and smaller columns either round the courtyard or on the facade. Two rooms in the baths had black and white mosaic floors, and there were *opus sectile* and wall veneers of Purbeck and imported marbles and other stones, wall-plaster painted with geometric, floral and marine designs, and stucco ornament. In addition to the architectural design, the construction techniques in masonry, tile hypocausts, ornamental stonework, flooring, painted plaster and other decorative features all required skilled craftsmen who initially had to be brought in from other provinces. Their employment advertised the extent of the patron's influential connexions in securing such rare commodities (Blagg 1980; Trow, this volume p. 112-3).

The Fishbourne proto-palace was not unique in these respects. At Angmering, 16 miles to the east, a bath suite built about AD 65-75 had an arrangement of rooms very similar to that at Fishbourne, and also had floors of *opus sectile*. It stood separate from the villa building, of which little is known, save that it was at least 24 metres long and

had walls with masonry foundations (Scott 1938). Another masonry house at Fishbourne, 100 metres north-west of the proto-palace, had at least two ranges of rooms joining at right angles, and was still unfinished when the period 2 Flavian palace was built c. AD 75 (Cunliffe 1971, 69-72). Black (1987, 84-6) would postpone the palace's date to the last decade of the 1st century, on the basis of the tile used; the argument may need more supporting evidence, though it is a reminder that the excavator's interpretation of the stratigraphy associated with the construction is not the only one possible.

For Roman Britain, the palace was exceptional in its size and amenities, and clearly it must have been built for someone equally exceptional, whether or not it was the Romans' allied British king Ti. Claudius Cogidubnus. In its courtyard plan and its furnishings, however, it was not so different in concept from its predecessor, except in being on a far vaster scale. It was built round a colonnaded garden 100 metres wide, across which an avenue of hedges and fountains led from the monumental entrance hall to the apsidal vaulted room in the centre of the west range, which may have been an audience hall or a formal dining room. Cunliffe (1971, 151-3) was impressed by the resemblance of this arrangement to that of the Palace of Domitian in Rome, which is indeed striking. There are two major points of difference, however. The entrance hall and apsidal room at Fishbourne are considerably smaller than the corresponding rooms in Domitian's Palace, but its courtyard garden is twice as large; the greater space would have reduced the dominating effect of the architecture. That would have been appropriate, given the second point of difference, that the Fishbourne palace courtyard layout included the residential quarters which in the Rome palace formed a separately planned complex adjacent to the ceremonial and state rooms. The residential quarters at Fishbourne were arranged in suites around subsidiary courtyards on the north and east sides of the main garden courtyard.

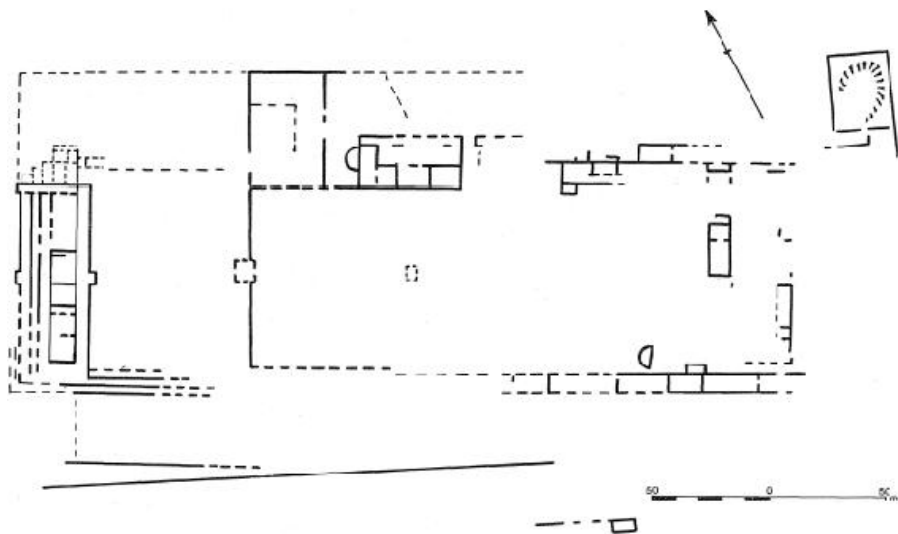


Fig. 13.2. *Estrées-sur-Noye*, villa and ancillary buildings.

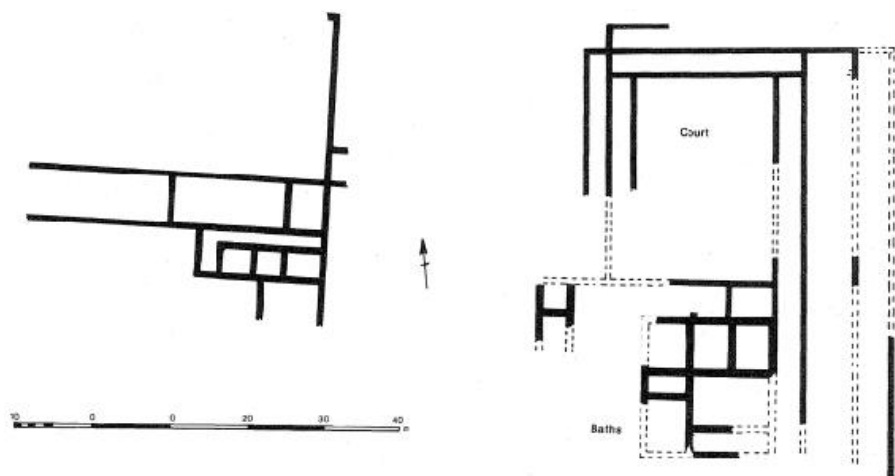


Fig. 13.3. *Fishbourne*, Period I houses.

Black (1987, 102-4) has argued that the courtyard plan house at Southwick, also in Sussex, can be seen as a small-scale version of Fishbourne's (Fig. 13.4). In particular, the entrance and an apsidal room are placed centrally on opposite sides of the courtyard, and the rooms in the north wing are arranged in a manner very similar to the suites built around the enclosed courtyards in the north wing at Fishbourne. Applying J.T. Smith's suggestion (1978, 162) that

‘multiple-unit’ houses, i.e. those which appear to comprise several units of accommodation, might be designed for an extended family or kindred, Black proposed (1987, 28) that Fishbourne and Southwick could have been occupied by more than one family of similar status.

The earliest stage of the villa at Eccles in Kent is very different from these Sussex houses (Fig. 13.5), except for the bath-house which, as at Angmering, was a separate building, constructed c. AD 65. The house consisted of a range of twelve rooms, 75 metres long overall, fronted by a corridor. The five rooms at the north-west end had tessellated floors; those of the remainder did not survive, though there were indications that some were tiled. The corridor had a wooden floor, and it is thought that its roof was supported at the front by timber posts placed upon a low sill wall. In front of the house, and parallel with it, at a distance of 11.6 metres, there was a long narrow rectangular structure measuring 51.1 x 5 metres, rendered internally with *opus signinum* and with a drain in one corner, which has been interpreted as an ornamental pool (Detsicas 1983, 120).

The plan of the house is unusual in the combination of its length with a very simple linear arrangement of rooms. As J.T. Smith (1978, 160) has pointed out, the plan can be analysed in terms of there being three identical groups of three rooms, of which two were square with a narrower room between them. Three other rooms were placed, one between two of the groups of three, and one at each end of the building. There is no cross-axis of symmetry. Apart from the insertion of cross-walls in two of the rooms, this range of rooms remained essentially unaltered in plan, though about AD 180 further rooms were added at the north end, and an east corridor, itself later divided into a series of rooms. Initially, however, the villa must have had a rather barrack-like appearance, and in the relative simplicity both of its planning and of its decoration it resembles the period II house at Haccourt.

The house built at Mileoak, Northamptonshire, c. AD 65-75, is barrack-like in a different sense, in having several pairs of large and small rooms (Fig. 13.6). It was 39.6 metres long, and had a corridor along each side of the central range. In that sense it does not so much resemble the aisled houses to which the excavators likened it (Green and Draper 1978, 64), but rather a wingless corridor villa. It had clay floors and a tiled roof. The walls had footings of coursed rubble, but at least part of the superstructure was of timber and clay daub. The internal walls had plaster painted with panelled designs, and the outer walls of the building were rendered externally in maroon-coloured plaster (Green and Draper 1978, 34-41).

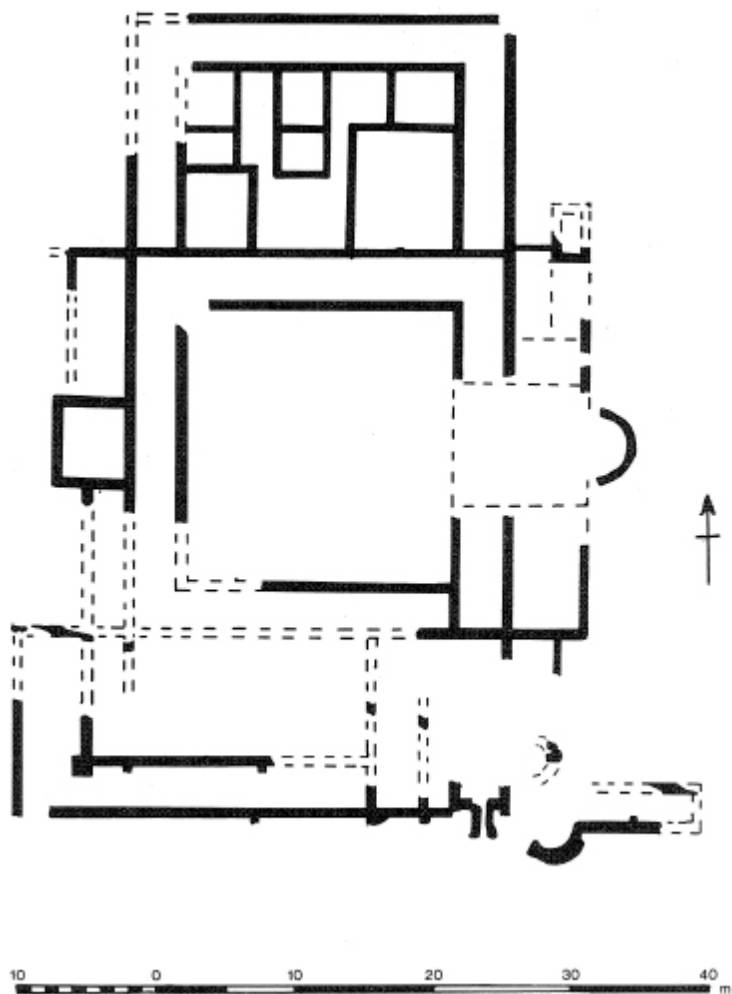


Fig. 13.4. Southwick, courtyard villa.

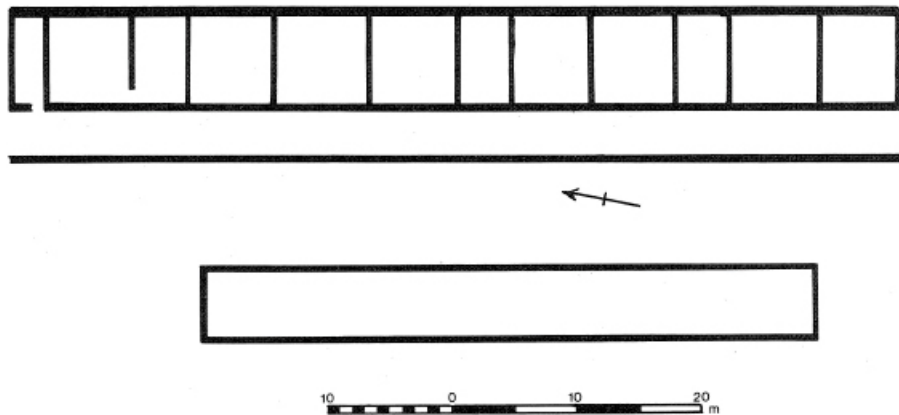


Fig. 13.5. Eccles, the Period I building.

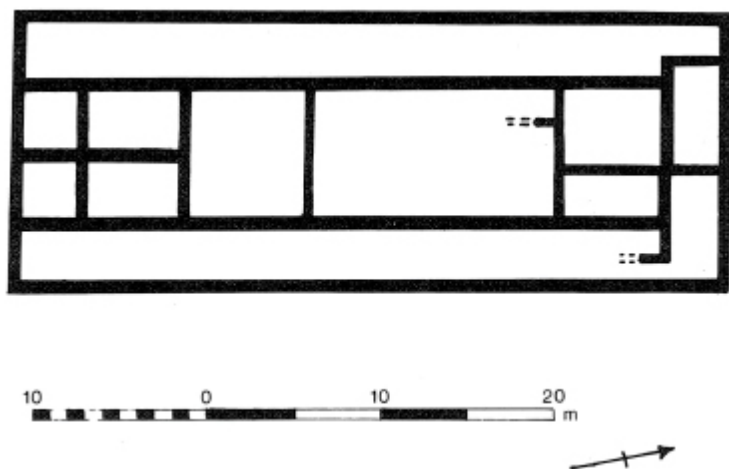


Fig. 13.6. Mileoak, villa.

It was not until the last years of the first century that the form of villa most characteristic of northern Gaul and Britain, the winged corridor type, was introduced into Britain, and it did not become fully established until well into the following century. In many cases, the plan can be seen as a straight-forward evolution from a rectangular block of five or six rooms arranged side-by-side, sometimes with a corridor or portico of timber posts along the front. Richmond (1969, 52-3) described such villas as the 'cottage' type, but that epithet gives too modest an impression of their probable social status, size and comfort. The next stage, formally, was the addition to the front of a projecting room or wing of rooms at each end, with a corridor

between them or along the entire facade, in some cases around the back as well.

There are, of course, individual variations from this generalised sequence. At Gorhambury, 1 km north-west of Verulamium, Iron Age circular houses were succeeded by a rectangular structure of timber, forming a block of at least three rooms with puddled chalk and clay floors. The sleeper beam construction was similar to that used in 1st century buildings at Verulamium. In the late 1st or early 2nd century a masonry house was built, with five rooms, a corridor with one wing room at the north-east corner, and a cellar at the south end (Fig. 13.7). It was decorated with moulded and painted stucco. Extensions to each end were built in the early 2nd century. It was replaced by a larger winged double corridor house built alongside in the mid-2nd century (Neal 1978, 37; Selkirk 1983). At Boxmoor, 9 km west of Verulamium, the earliest structure was a relatively small (21.6 metres long) late 1st century winged corridor house with an all round corridor. It was built of timber, with sleeper beams, wattle and daub walls, one room with painted plaster, and mortar floors. It was destroyed by fire, and replaced by a Hadrianic/Antonine winged corridor house of more than double the floor area with cob walls on masonry foundations (Neal 1974-6, 57-9).

It is striking how frequently a rectangular block of five or six rooms, 25 to 30 metres in length overall, forms the earliest phase of a villa, as at Park Street and Lockleys (Richmond 1969, 54, fig. 2.1), and continues as its nucleus. The regular repetition of certain groups of rooms within such nuclear blocks has also been noticed (Drury 1982, 295-99). Since the precise uses of the rooms are uncertain, the significance of the repetition cannot be closely defined, but it might be deduced that the nuclear block represents a plan evolved to meet the basic housing requirements of the Romano-British or Gallo-Roman landed family. It was to provide the main model for urban housing, as well as the unit from which most later and larger villas developed. The grander 1st century courtyard houses were not influential in the same way. They may, however, in combination perhaps with the similarly planned officers' houses in military forts, have been the model for one particular type of urban house, the *mansio*.

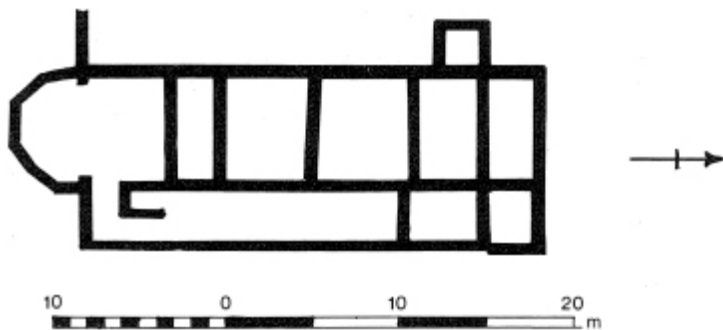


Fig. 13.7. Gorhambury, first century masonry house.

The evolution of early town houses in Britain follows a rather different pattern from what can be observed in Gaul. In the south of Gaul, the 1st century BC peristyle courtyard houses at Glanum and Vaison follow Hellenistic precedents which could well have been derived from such nearby Greek colonies as Marseille. Goudineau (1979, 239-48), however, in observing that Hellenistic peristyles were also common in Campanian houses, prefers to see their presence in the Gaulish cities as the result of Romanizing influence, introducing a feature which had already been assimilated in central and southern Italy.

Outside Provence, there is little evidence for Roman town housing until late in the 1st century BC. At Lyon, for example, excavations which began in 1974 adjoining the Rue des Farges on the Fourvière hill uncovered an area of housing, terraced into the hillside, and laid out at the end of the century. This included a series of shops on one side of the street, and a large house with a peristyle courtyard, the columns being composed of brick faced in stucco (Desbat *et al.* 1976). The greater element of luxury seen in the 1st century AD houses at Vaison (Goudineau 1979) is also illustrated in Autun (Fig. 13.8), where two courtyard houses built beside the *Cardo Maximus*, on the site of earlier similarly aligned buildings, date 'from the Flavian period, probably towards the beginning of the 2nd century' (Blanchard-Lemée *et al.* 1986). That of Balbus Iassus (named from the dedication of an altar to Dea Tutela which was found in it) had two floors of *opus sectile*, one being of marble, a room with marble wall veneers, and a garden fountain. The other house also had *opus sectile* floors, and two of black mosaic with sporadic white tesserae, comparable with those of southern Gaul.

Knowledge of 1st century AD town houses further north in Gaul, however, is inhibited by problems of dating and the absence of detailed plans for comparison, though there are indications of

buildings of quality. Beauvais, at least, has produced part of the plan of a rich house with peristyle courtyard and *impluvium* on the Rue Biot (Frézouls 1982, 168). In Metz, the stratified evidence for several fires allows the early development of housing to be indicated in some detail. J.-J. Hatt's identification (1958, 324-5) of these fires with the events of AD 21 and 68-70 should be viewed with caution, however; little has been published of the evidence, other than reference to some Arretine potters' stamps. Two areas of 1st century housing have been explored. At the north end of the city, in the Sainte-Croix quarter, native-type houses of wood were destroyed in an early 1st century fire, rebuilt in wood, but with painted plaster walls, and after a fire attributed to the year 68 they were rebuilt in stone, again with painted plaster walls. In the Esplanade and Citadelle area to the south the development seems to have been of higher quality to begin with, the houses being built of *petit appareil* masonry and decorated with black-ground frescoes in the Third Pompeian style. After their destruction c. AD 68-70, their successors included houses with coloured marble wall veneers, Fourth-style wall paintings and hypocaust heating.

At Trier, by contrast, such evidence as there is for 1st century houses is for modest timber and wattle-and-daub structures, but nothing approaching a complete house-plan has been recovered. The second half of the century saw the building of some rather more substantial structures, with stone foundations and black and white geometric mosaics, found in Insula H 10 and in H 4, G 5 and G 6, beside and below the Aula Palatina. In Insula H 8 excavations discovered the stone-built cellars of 1st century houses (Wightman 1970, 73). In comparison with the spacious and well-furnished houses of the second century and later, this suggests relatively modest beginnings of domestic architecture in the city (as was also true of its public buildings). This contrasts both with the evidence from Autun and Lyon in central Gaul, and with that from the more luxurious villas in Gallia Belgica. It is not too surprising, however, in view of Walthew's observation (1982) of a slowing down of urban development in Gallia Belgica in the second half of the 1st century.

Domestic architecture in the British towns has equally modest beginnings. The best evidence comes from those damaged by fire at the time of Boudicca's rebellion, since ironically the destruction deposits have preserved the remains of timber and clay structures to a greater than usual extent. At Colchester, after the foundation of the *colonia* c. AD 47, some of the timber-framed barracks of the legionary fortress were adapted by alteration of internal partition walls. New

buildings were constructed in places where the streets had been realigned, but in most cases little of their plans has survived. At the Lion Walk site, however, Building 8 was found to have ranges of rooms on three sides of a rectangular gravelled yard which opened on to the street (Fig. 13.9). These ranges may in fact have formed more than one building, since two types of superstructure were found. One was of wattle-and-daub set between squared uprights, the other type, in three walls in the western half of the site, was of clay blocks only; both types of wall were built on sill-beams resting on the ground (Crummy 1984, 40). One room contained the burned remains of two mattresses in one corner, and was presumably a bedroom; the wall at the head of the bed was plastered and painted on both sides to imitate marble.

The period I building on Insula XIV at Verulamium is one of the best-preserved timber buildings of this date. It stood at a street corner, and had a continuous portico along both frontages with rooms of regular size opening on to it. The height of the roof implied by the width of the building indicates that there would have been ample space for accommodation above the ground floor. The manner of construction, with sleeper beams and uprights of oak carrying an infill of wattle-and-daub, and the estimated quantity of timber required (over 3000 metres) suggested to the excavator that military craftsmen and stockpiles had been made available (Frere 1972, 11). Frere found analogy for the construction in the fort at Valkenburg in the Netherlands, but its similarity to the techniques used in Building 8 at Colchester, excavated after the report on Insula XIV was written, might suggest that the military affinities were at one remove, with the veteran *colonia* as the intermediary for its introduction into civilian contexts. Moreover, as Perring has pointed out (1987, 147), the technique was used in civilian buildings outside Britain, for instance at Lyon. Perring has also noted (1987, 149-50) that the materials used for these 1st century buildings indicate that they 'were built as simply and cheaply as possible', with a structure based on earth-fast posts or sleeper beams, and walls of wattle-and-daub, planks or unbaked clay bricks. In Insula XIV at Verulamium and the Newgate Street site in London (Perring 1987, 150-1) later 1st century shops were built end-on to the street, and their more complex plan of rooms perhaps indicates more provision for domestic comfort. House D at Watling Court, London, with mortar and mosaic floors, painted wall-plaster and rooms occupying a street frontage of at least 30 metres, is a rare example of a 1st century Romano-British house comparable with some of the villas described above (Fig. 13.10), if not in the same class as

the marble-furnished houses of Autun and Metz. Not until the mid-2nd century do substantial town houses become at all common in Britain (Walthew 1975, 204; see also Trow, this volume, 113).

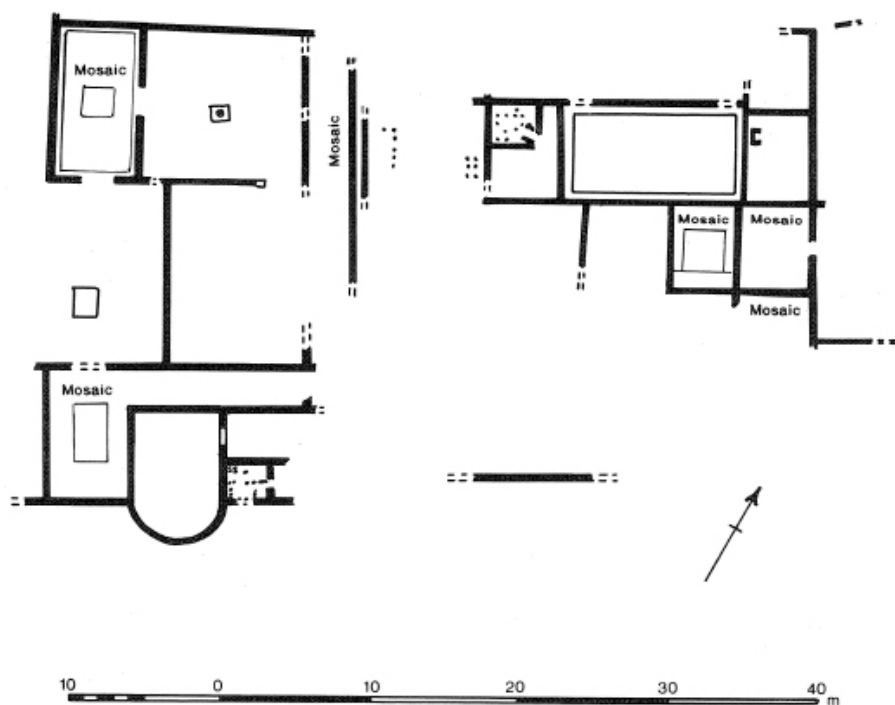


Fig. 13.8. Autun, Flavian courtyard houses.

Conclusions

One point made in the introductory paragraphs to this paper related to what might be deduced from 1st century houses about the variety of social response to the Roman conquest. Considering first the large courtyard villas, e.g. Echternach and Fishbourne: their formal symmetrical layout reflects Mediterranean tastes; the courtyards and multiplicity of rooms could accommodate a large household retinue and numerous guests; and they have a large reception room as a main feature on the central axis. All these features suggest a choice of design intended for the display of ceremonial public life. There are really only two social categories for whom such arrangements would be appropriate: either wealthy Roman officials or settlers; or the Romanized descendants of native noble and royal families, such as Gaulish and British Julii and Claudii as Florus, Sacrovir, Vindex, Civilis and Cogidubnus. The grand 1st century villas could represent

the latter category in a way appropriate to their actual or equivalent equestrian status as commanders of Roman auxiliary regiments. If the patronage of early religious sanctuaries, e.g. Ribemont and Hayling Island, was also due to these aristocrats, such a nurturing of their traditional rural power base might explain why urban development was initially so much slower. Conversely, the fact that grand courtyard houses were something of an early exception to the norm of rural housing, superseded by the more gradual development of other types of house, might suggest that these grandees did not long maintain their exceptional position (*cf.* Picard 1983, 420). The Gaulish rebellions were one of the ways in which they overreached themselves.

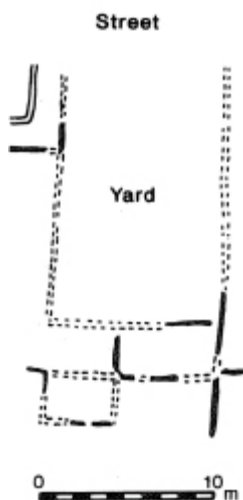


Fig. 13.9. Colchester, Lion Walk, Building 8.

Among the other types which show the growth of a more broadly based Romanized rural society, two may be chosen for further comment. First, the appearance of the five- or six-roomed corridor house, often much elaborated later with wings and additional rooms. In their basic form, they show the adoption of Roman building standards. In relation to Iron Age houses, the more specialised plan implies the adoption of Roman manners of living, but it does not suggest the frequent entertainment of visiting guests or clients. It seems to have needed two or three generations after the conquest for the assimilation of ideas or the accumulation of resources to build in this manner. Such houses might be seen as the properties of Romanized native gentry, and their increasing frequency as an

indication of the greater significance which that class acquired at the expense of the magnates who had been the traditional leaders of pre-Boudiccan and pre-Civilis days. These developments may also reflect the broader changes in the nature of social control over land and forms of land tenure which Gregson (1988) has discussed.

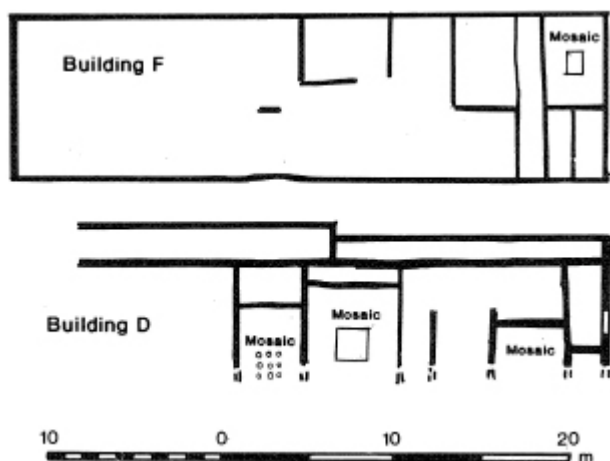


Fig. 13.10. London, Watling Court, House D.

In the second case, exemplified by Haccourt II and Eccles, the linear arrangement and repetition of small suites of rooms might suggest joint occupation by two or more nuclear families, rather reminiscent of the Italian *fattoria*, housing dependent peasants or tenants rather than landowners. The large-scale 2nd century rebuilding of Haccourt is of such different character that a radical change in the type of occupant is indicated.

Only rarely are 1st century town houses similar to those in the country in detail, and the differences indicate a radically different social structure, one which seems to become much more assimilated in the course of the 2nd century. One of the main questions in considering the process of Romanization has been the extent to which the native provincials adopted an urban way of life. Part of the answer must depend on the quality of that urban life. Its quality in Gallia Belgica and Britain, to judge from housing, was in general rather poor until well into the 2nd century, whatever may have been invested in public building. That makes the exceptional finer houses, as in Beauvais and Watling Court, London, the more striking. Also, when in the 2nd century town houses in Britain are built on the model of villas (Walthew 1975), it might be deduced that they were being built for

the same social group, rather than for the upwardly mobile shopkeepers of Newgate Street, London and Insula XIV, Verulamium (cf the 'self-assured artisans' of Gaul: Drinkwater, this volume, 212). This might indicate that a new generation now saw an advantage – perhaps in controlling markets and the raising of taxation – to be gained by adopting the bourgeois style of living from among the available Roman options. We do not know, of course, whether those who prospered sufficiently to patronise the construction of public buildings and to build large town houses, adapting the architecture of the villa to that purpose, were also landed gentry moving to the town; or whether the gentry remained rurally apart from an urban mercantile class whose houses showed that they aspired to the gentry's standards, if indeed it is not too anachronistic to make such a distinction.

Some distinction must be made, however, in judging the significance of Roman building materials. It is evident, from Lion Walk, Colchester and from the early Boxmoor villa, that quite modest houses might have painted wall-plaster and mortar floors. Mosaics and stucco mouldings show greater aspirations. Marble floor and wall veneers and columns of stone (particularly if also imported from a distance, as Fishbourne's were) needed a wider network of social connexions both for supply and for installation.

Architecturally, these are some of the varied levels of social response to what Rome had to offer. It is as well also to remember what Pliny (*NH* XXXVI, 7, 49) said of the house of M. Aemilius Lepidus at Rome, the finest of its time when built, but thirty-five years later, not to be counted among the top hundred. As Roman building methods and standards became increasingly widespread in Gaul and Britain, expectations of comfort and of architectural prestige increased also; and as wealth accumulated during the Pax Romana, so did the means to satisfy those expectations. That, however, is beyond the concern of this volume.

References

- Agache, R. 1978 *La Somme préromaine et romaine*. Amiens.
- Black, E.W. 1987 *The Roman Villas of South-east England* (Brit. Archaeol. Rep. 171). Oxford.
- Blagg, T.F.C. 1980 Roman civil and military architecture in the province of Britain: aspects of patronage, influence and craft organization, *World Archaeol.* 12 (1), 27-42.
- Blagg, T.F.C. 1986 Roman religious sites in the British landscape, *Landscape History* 8, 15-25.
- Blanchard-Lemée, M., Olivier, A. and Rebourg, A. 1986 Deux maisons à pavements

- d'Augustodunum (Autun, Saône et Loire), *Gallia* 44, 120-49.
- Boe, G. de 1974 Haccourt I, *Archaeol. Belgica* 168, 5-52.
- Cadoux, J.-L. 1984 Le sanctuaire gallo-romain de Ribemont-sur-Ancre (Somme): état de recherches en 1983, *Rev. du Nord* 66, no. 260, 125-45.
- Collis, J. 1984 *Oppida: earliest towns north of the Alps*. Sheffield.
- Cunliffe, B. 1971 *Excavations at Fishbourne 1961-1969, I: The Site* (Soc. Antiq. London Res. Rep. 26). Leeds.
- Crummy, P. 1984 *Excavations at Lion Walk, Balkeerne Lane and Middleborough, Colchester, Essex* (Colchester Archaeol. Rep. 3). Colchester.
- Desbat, A., Helly, B. and Tavemier, D. 1976 Lyon retrouve ses origines, *Archéologia* 92, 8-19.
- Detsicas, A.P. 1983 *The Cantiaci*. Gloucester.
- Drinkwater, J.F. 1983 *Roman Gaul*. London and Canberra.
- Drury, P.J. 1982 Form, function and the interpretation of the excavated plans of some large secular Romano-British buildings. In P.J. Drury (ed), *Structural Reconstructions* (Brit. Archaeol. Rep. 110: Oxford), 289-308.
- Frere, S.S. 1972 *Verulamium Excavations I* (Soc. Antiq. London Res. Rep. 28). Oxford.
- Frere, S.S. 1983 *Verulamium Excavations II* (Soc. Antiq. London Res. Rep. 41). London.
- Frézouls, E. 1982 *Les Villes Antiques de la France I. Belgique*. Strasbourg.
- Fulford, M.G. 1982 Town and country in Roman Britain – a parasitical relationship?, in Miles 1982, 403-19.
- Goudineau, C. 1979 *Les Fouilles de la Maison au Dauphin*. (37 suppl. à *Gallia*) Paris.
- Green, C. and Draper, J. 1978 The Mileoak Roman villa, Handley, Toweester, Northamptonshire. Report on the excavations of 1955 and 1956, *Northants. Archaeol.* 13, 28-66.
- Gregson, M. 1988 The villa as private property. In K. Branigan and D. Miles (eds), *The Economies of Romano-British Villas* (Sheffield), 21-33.
- Hatt, J.-J. 1958 Informations archéologiques: antiquités historiques, circonscription de Strasbourg, *Gallia* 16, 322-42.
- Haverfield, F. 1923 *The Romanization of Roman Britain* (4th ed). Oxford.
- McKay, A.G. 1975 *Houses, Villas and Palaces in the Roman World*. London.
- Miles, D. (ed) 1982 *The Romano-British Countryside: studies in rural settlement and economy* (Brit. Archaeol. Rep. 103) Oxford.
- Millett, M. 1982 Town and country: a review of some material evidence, in Miles 1982, 421-31.
- Millett, M. 1987 The question of continuity: Rivenhall reviewed, *Archaeol. J.* 144, 434-8.
- Neal, D.S. 1974-6 Northchurch, Boxmoor and Hemel Hempstead station: the excavation of three Roman buildings in the Bulbourne valley, *Herts. Archaeol.* 4, 1-135.
- Neal, D.S. 1978 The growth and decline of villas in the Verulamium area, in Todd 1978, 33-58.
- Percival, J. 1976 *The Roman Villa: an historical introduction*. London.
- Perring, D. 1987 Domestic buildings in Romano-British towns, in J. Schofield and R. Leech (eds), *Urban Archaeology in Britain* (CBA Res. Rep. 61: London), 147-55.
- Picard, G.-C. 1983 Les centres civiques ruraux dans l'Italie et la Gaule romaine. In *Architecture et Société* (Coll. de l'Ecole Française de Rome 66: Paris and Rome), 415-23.
- Reynolds, P. 1979 *Iron Age Farm: the Butser experiment*. London.

- Richmond, I.A. 1969 The plans of Roman villas in Britain, in Rivet 1969, 49-70.
- Rivet, A.L.F. (ed) 1969 *The Roman Villa in Britain*. London.
- Rodwell, W.J. 1978 Buildings and settlements in SE Britain in the Iron Age. In B. Cunliffe and T. Rowley (eds), *Lowland Iron-Age Communities in Europe* (Brit. Archaeol. Rep. S 48: Oxford), 25-41.
- Rodwell, W.J. and K.A. 1985 *Rivenhall: Investigations of a Villa, Church and Village 1950-1977* (Chelmsford Archaeol. Trust Rep. 4, CBA Res. Rep. 55). London.
- Scott, L. 1938 The Roman villa at Angmering, *Sussex Archaeol. Coll.* 79, 3-44.
- Selkirk, A. and W. 1983 Gorhambury, *Current Archaeol.* 87, 115-21.
- Slofstra, J. 1983 An anthropological approach to the study of Romanization processes. In R. Brandt and J. Slofstra (eds), *Roman and Native in the Low Countries: spheres of interaction* (Brit. Archaeol. Rep. S 184: Oxford), 71-104.
- Smith, J.T. 1978 Villas as a key to social structure. In Todd 1978, 149-85.
- Todd, M. (ed) 1978 *Studies in the Romano-British Villa*. Leicester.
- Walthew, C.V. 1975 The town house and the villa house in Roman Britain, *Britannia* 6, 189-205.
- Walthew, C.V. 1982 Early Roman town development in Gallia Belgica: a review of some problems, *Oxford J. Archaeol.* 1 (2), 225-35.
- Ward-Perkins, J.B. 1981 *Roman Imperial Architecture*. Harmondsworth.
- Wightman, E. 1970 *Roman Trier and the Treveri*. London.
- Wightman, E. 1985 *Gallia Belgica*. London.

14. For Better or Worse? Towards an Assessment of the Economic and Social Consequences of the Roman Conquest of Gaul

by J. F. Drinkwater

Julius Caesar conquered Gaul beyond the Republican *Provincia* between 58 and 51 BC. His campaigns, motivated more by personal political ambition than by the needs of the Roman state, resulted in confiscation of property, enslavement, mutilation and death on a massive scale, and will have brought great misery to the indigenous population. Yet, in the course of a recent survey of the events of this period, I justified the forced integration of northern Gauls into the Roman Empire as follows:

This is the debit side of the account. On the other hand there is an important credit side. For example, it may be argued that the very disruption and destruction which resulted from the Conquest-period, and the military activity which followed, served to remove those Gauls least susceptible to the acceptance of Romanization (Drinkwater 1983: 123)

This statement amounts to an acceptance of political and cultural imperialism quite out of keeping with contemporary regard for the virtues of a liberal and pluralistic society; it has caused me considerable unease. On the other hand, I would suggest that in expressing it I was merely, albeit somewhat crassly, putting into words a sentiment shared by many who interest themselves in Roman imperial history: that the Roman Empire was a “good thing” (cf. Millett above, p. 37). In English-speaking scholarship, at least, this pre-supposition is seldom acknowledged and even less explained; it surely deserves closer investigation.

The case that the Roman Empire served in some way or other to advance the human condition may be argued in two ways. On the one hand, there is the Marxist interpretation, according to which the Empire should be seen as providing the political and social framework for a process of class-conflict that eventually led to the slave-owning

society of classical antiquity's being replaced by the feudal society of the Middle Ages. The transformation improved the lot of mankind because it brought it one stage closer to communism, albeit at the sometimes considerable suffering of those caught up in the change (Marx and Engels 1888: 7ff; cf. de Ste. Croix 1981: 226-55, 267ff. – preferring 'serfdom' to 'feudalism'). On the other hand, there is what may be characterised as the 'vulgar positivism' of western 'bourgeois' historiography. This thinking is founded on the conviction that, despite the immediate distress involved, the Roman conquest and the process of Romanization that followed fairly quickly (in a matter of a generation or so) led to a general amelioration in the lives of the subject peoples. It does not directly concern itself with the contribution of the Roman Empire to long-term historical development. It is not the aim of this paper to contrast and decide between the Marxist and positivist views. While I accept that there is much to be learned from Marxist analysis, it will be clear from my opening quotation that I belong firmly in the positivist camp. Rather, my purpose here is to test the validity of the positivist interpretation on its own terms, with particular reference to the experience of the Three Gauls: were the northern Gauls better or worse off under Roman rule than they had been before?

It seems appropriate to give separate consideration to the material and cultural consequences of the Roman conquest of northern Gaul. Of these, the material side is by far the easier to deal with. Those who share the view that Roman rule had a beneficial effect would argue that, from the late-first century BC to the middle of the third century AD, Gaul became much more prosperous than ever before. In simple terms, the improvement may be explained as resulting from the Roman Peace. The blessings of the *Pax Romana* are nowhere better expressed than in what in my opinion remains the most perceptive historical novel about Caesar's Gallic War. Naomi Mitchison pictures how, after 51 BC the Gauls began to settle down, and those few who continued to oppose Rome were increasingly seen as rebels, not freedom-fighters:

...everywhere the Roman was the good comer. Men were glad to be able to sow winter wheat and be certain that there would be no war to snatch them off before it was ripe; women knew there would be no more running from burning towns with a baby clutched to the breast, their husbands safe now. Maybe it was the quiet after a great storm; there still would be gusts from time to time; but the chiefs were beginning to look towards Rome, to be dazzled by that great name (Mitchison 1923: 305)

More recently, however, archaeologists and historians have begun to

explain the growth of Gallic prosperity more closely, and with more allowance made for the complexities of this development. It is, for example, now generally accepted that the quickening of Gallic artisanal and commercial life, which led to increased if aristocratically monopolised wealth, began long before Roman intervention in the west: in the Celtic Iron Age, and perhaps even earlier (Daubigney 1984; Drinkwater 1987a). In favour of the Roman occupation it can be said: first, that it did not destroy the basis of this prosperity; and second: that it provided conditions that accelerated economic growth. Indeed, as far as the latter is concerned, over the last few years archaeologists and historians, inspired to a large extent (though by no means wholly) by the work of Hopkins, have begun to relate the growth in Gallic wealth directly to the great Roman military presence on the Rhine. On such an interpretation, the emergence of the 'German' frontier-provinces (for the most part, in fact, created out of Caesar's 'Belgica' and 'Celtica') acted as an important, though unplanned, stimulus to the economy of Gaul as a whole: taxes raised in Gaul, and beyond, to supply and pay the troops were spent in Gaul and, increasingly, on Gallic products (Hopkins 1978, 1980; Drinkwater 1983: 128f; cf Drinkwater 1977/78). Although certain details of this model have been criticised (e.g. Millett 1984: 67), it seems well on the way to becoming the new orthodoxy. For example, it has been adopted, virtually in its entirety, by no less an authority than Wightman: "There can be no doubt that incentive to improve agricultural output came from the twin sources of taxation and army-supply" (Wightman 1985: 148; cf. Drinkwater 1987b).

In any event, whatever explanation one adopts, it seems reasonable to accept that in the years following the Roman conquest northern Gaul became significantly richer in material terms. The boom in Gallic agriculture is represented by the mushroom-growth of the Somme villas, and the invention of the Gallic harvesting-machine (Agache 1975, 1978; White 1969). The vitality of Gallic commerce and industry may be seen in the emergence of a network of urban settlements, above all the *vici* ('townships'/'villages') which, unlike the *civitas*-capitals ('cities'), cannot be dismissed as parasitic administrative centres. To these will have been conveyed the products of the surrounding countryside for further processing, and sale both at a local level and beyond. The income thus generated will also, of course, have enabled those involved in this trade in their turn to purchase goods from other areas, and so have caused each township to act as a centre for the distribution of 'imports' (Drinkwater 1983: 129f.). It comes as no surprise, therefore, that the main townships

eventually produced a well-to-do and self assured class of artisans and shopkeepers, the most enterprising of whom may even have risen to become, as *nautae* ('river-shippers'), members of the Gallic mercantile élite (Drinkwater 1978: 846). Some scholars would, indeed, argue that the most successful *nautae* even intermarried with the landowning aristocracy (Picard 1981: 890). This was a world unlike that of Caesar's Gallic warlords: different people had become wealthy; and wealth was more evenly spread.

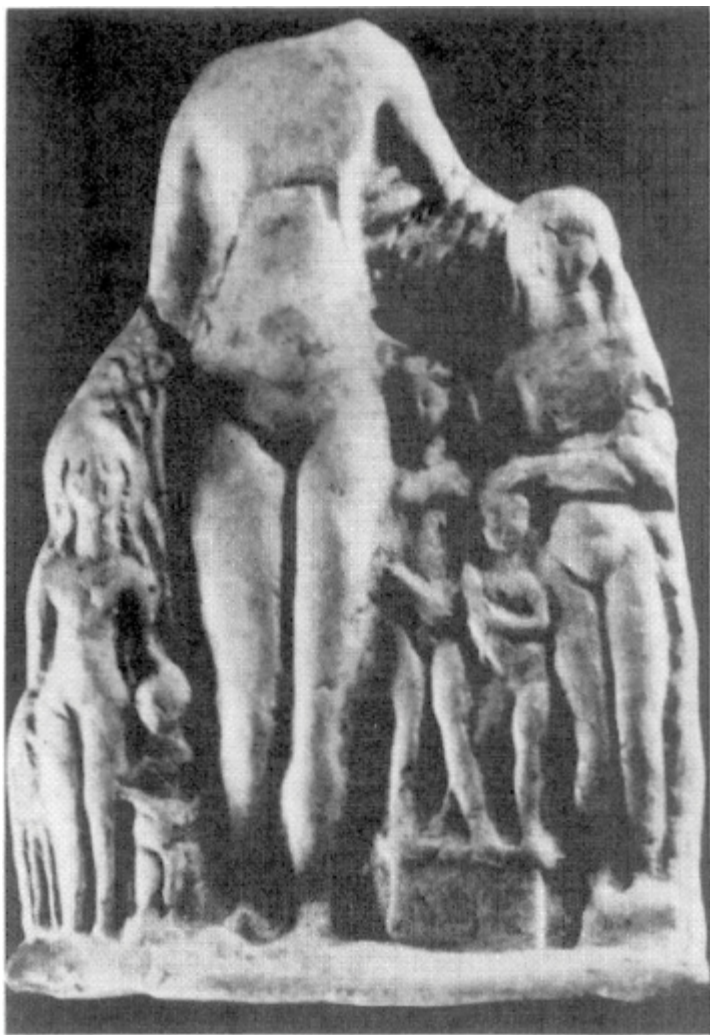


Fig. 14.1 "Venus and Children" after Vertet

The latter point is surely borne out by the richness of western continental museum collections, in which the relative frequency of

bronze and iron objects of the Roman period is especially striking (Drinkwater 1983: 186; cf. Ladurie 1987: 90f., for the poverty in metal tools etc. of the fourteenth-century French peasant). It must also be supported by the continuing identification of settlement-sites of the high imperial period, the frequency of which suggests a density of population (at c. 20 persons per square kilometre: a total of c. 11,000,000 for the Three Gauls as a whole) that was not to be exceeded until the high-medieval and early-modern periods (Wightman 1985: 121; cf. Ladurie 1987: 22f., 42). The rising population must have resulted from, and may itself have further increased, the strength of the Gallic economy (Drinkwater 1982: 124).

Thus Gaul, and the Gauls, grew richer under Roman rule. However, it requires little historical imagination to picture that the transformation will have been far from instantaneous and untraumatic. The early years will have witnessed an odd mixing of Gallic and Roman ways; in particular, the removal of direct military rule, and the spread of the engine of Romanization, the planned Greco-Roman city, with its street-grid and wide range of public buildings, are likely to have occurred much more slowly and irregularly in Gaul than they did, for example, in Britain at a later date (Drinkwater 1985: 52f.; cf. Millett above, [p. 41](#)). It is arguable that such delay both contributed to the hybrid look of the country and substantially increased the overall cost of change, since it would have encouraged early, uncoordinated construction of Romanized buildings that, only a generation or so later, were abandoned or levelled in favour of the new cities. Certainly, the Gallic notables caught up in the rebellion of AD 21 were involved in serious overspending of some sort (Drinkwater 1983: 28). The increase in prosperity was not without its difficulties. This point takes us to consideration of an even greater price to be paid for relative peace and material good fortune: the social and cultural consequences of Roman rule.

Here again it is instructive to turn to the historical novel, and to Mitchison's imagined exchange between a young Roman and a young Gaul:

"...our rule's not hard; we treat a people better than its own kings do. And the things we bring with us: trade and peace and prosperity, goods roads and good laws; they ought to weigh a little."

"There's liberty in the other scale: it's heavy."

"But what is liberty? Liberty to be oppressed. But you don't care as long as it's your own chiefs! We don't interfere with you, we leave you your religion and your customs and your councils; it makes no difference to a poor man where he pays his taxes. And if you want to fight, we can give you good fighting and good pay all over the world: in Asia and Africa, along thousands of miles of frontier! Isn't that good enough?"

A major cost of becoming part of the Roman Empire, over and above the immediate agonies of military defeat, was indeed the loss of political freedom. The particular interests of the hitherto turbulent and volatile Gallic *civitates* were now to be fully subordinated to those of Rome (Drinkwater 1983: 7). Mitchison's Gallic hero eventually escapes from the comfortable cage of Roman protection by magically joining the creatures of the Celtic wildwood. His metamorphosis also signifies his recognition that a further cost would have to be paid by those who were content to suffer Roman rule: loss of cultural identity. Despite the Roman's claims to the contrary, it is arguable that Rome did not leave her subjects' "religion...customs and...councils" intact. She demanded not just their bodies, but also their souls. Her success in imposing her will in this respect can be seen most dramatically in the disappearance of the Gallic language as an intellectual medium. As far as the upper classes are concerned, Gaul went Greco-Roman: there was no independent Gallo-Celtic culture. The *locus classicus* of the extinction of indigenous tradition is to be found in the request of a late-fourth century Gallic nobleman to Symmachus, a leading Italian aristocrat, for suggestions as to source-material for a planned history of Gaul. Symmachus recommended Livy, Caesar and the elder Pliny: all, of course, Roman writers (Wightman 1975).

The two main causes of the overwhelming victory of the Latin language and Greco-Roman civilisation are, in my opinion, not hard to identify. On the one hand there was Rome's deliberate destruction of druidism, and thus of the uncompromisingly oral tradition for which the religion had acted as guardian (Drinkwater 1983: 38f.; Vertet 1984: 88). On the other, there was a spontaneous and enthusiastic willingness to Romanize on the part of the leaders of Gallic society, confirmed in their positions and ready to be used as an unpaid imperial civil service by the ruling power (*cf.* Millett, above, p. 38). The replacement of druidical by classical education was an essential element in both processes, and may be discerned at a remarkable early date, for example in the origins of the university of Autun (Tacitus, *Annales* 3.43.1; *cf.* Millett, above, p. 38-9). In the absence of any alternative rallying-point or leadership for the defence of the old ways, the remainder of the population will have followed in the aristocrats' train. There is no evidence to suggest that the Gallic upper classes ever repented of their abandonment of their heritage. On the contrary, as the centuries progressed they became ever more Roman in outlook. However, there remains the important question as to how the disruption of indigenous culture was experienced further down the

social scale, by the majority of the Gallic population.

At this point we encounter a serious problem: evidence for the cultural life and world-view of the common people of Roman Gaul under the early Empire is virtually non-existent. It is possible to glean something from much later literary sources, such as Ausonius, Sulpicius Severus and Sidonius Apollinaris, but what is wanting is significant contemporary intelligence. However, the problem may now have been eased a little if, as Vertet proposes, archaeological material, in the form of small, religious statuettes, produced among the Arverni and sold widely throughout the north-western provinces, may be admitted in evidence.

In a recent bold and very stimulating article, Vertet puts forward the thesis that these terracotta statuettes represent a fourth element in Romano-Gallic religious activity, to be set alongside the 'official', 'oriental' and 'Romano-Celtic' cults conventionally accepted by scholars; as such, they may be regarded as a statement by those who made and bought them about the Empire in which they lived (Vertet 1984: 82-88, 90f.). Vertet argues that the deities comprised in the conventional groups were predominantly aristocratic and urban in their appeal, as is shown by the high quality of the temples, inscriptions and statuary dedicated to them. They were, therefore, very much part of the wider, blander, Greco-Roman culture of the upper classes of Gallic society. Such Celtic divinities as continued to be worshipped within this cultural environment lost many of their indigenous characteristics, above all, their aggression: their personalities and functions were re-fashioned to suit the prevailing political climate (Vertet 1984: 86ff.). The Arvemian statuettes, however, should be regarded as something quite different – beyond the classicizing influences of Roman officials and Gallic villa-owners and townsmen. They were manufactured in small, poor, rural potteries by Celtic-speaking craftsmen who, evidently, well understood their market: cheap to produce and, presumably, cheap to buy, the statuettes are found throughout Gaul and Britain, and as far east as Raetia. In fact, their distribution pattern closely resembles that of central Gallic ('Lezoux') samian ware (Vertet 1984: 95ff., 97ff.). It used to be thought that these statuettes dated to the third and fourth centuries; now, however, it seems clear that they were at their most popular in the second century, the high point of the Roman Peace in the west (Vertet 1984: 81, 87).



Fig. 14.2. "Wet nurses" after Vertet

The Arvernian statuettes are usually taken as depicting Greco-Roman or classicised Celtic gods (Vertet 1984: 89, *cf.* 85f.). As Vertet has pointed out, while some indeed appear to represent classical deities, many do not; they should not be forced to fit a preconceived frame of reference (Vertet 1984: 89ff., 95). The strikingly common 'Venus' and *matres* figures are, for example, quite unlike their supposed classical or Rhenish models (Fig. 14.1 and 14.2): 'Venus' is frequently accompanied by other, smaller, figures; and the *matres* appear alone, suckling one or two babies (Vertet 1984: 92). The identity of 'Venus' eludes us; she and her companions were perhaps concerned with a fertility cult (Vertet 1984: 95). The 'wet nurse' may, however, with more confidence be interpreted as a powerful, protecting, earth- or mother-goddess (Vertet 1984: 105). The phrase 'mother-goddess' provokes the thought that this divinity may have been a survival from the pre-Roman past, uncontaminated by assimilation with the Greco-Roman pantheon because she lacked educated worshippers to make the association. Vertet, however, denies such a straightforward origin, preferring to see the statuettes at issue as reflecting a new type of religious thinking, born of a fusion of

ancient Celtic and contemporary classical elements, and serving to help people come to terms with (by articulating their reaction to) changed conditions brought about by the Roman conquest (Vertet 1984: 97-102). On this view, the ‘mother-goddess’ should be interpreted as no less than an image of Rome, the all-powerful guardian and provider (Vertet 1984: 107).

In Vertet’s eyes, the statuettes tell a depressing story regarding the relationship between the imperial mother and her children. She is distant, stiff and cold. She grasps, rather than supports, her infants, who are tightly swaddled and totally unregarded by her. Her breasts are small and oddly positioned: she gives milk, but does so grudgingly and meanly (Vertet 1984: 106f., 109: “allaitant peu et mal”). In Vertet’s view, the statuettes express people’s feelings of powerlessness and resignation before the imperial power; resistance is useless:

Les dirigeants et les représentants de Roma Aeterna sont puissants et sages. Toute résistance à leur égard, preuve d’ingratitude devant ses bienfaits méconnus, est toujours châtiée. Elle a les droits du paterfamilias sur un empire aux provinces infantilisées. (Vertet 1984: 107)

Thus Gallic peasants live in peace, but without esteem or even prosperity: they have no share in the new-found wealth of the aristocrats and urban dwellers; and they have no cause to hope for any improvement in their lot (Vertet 1984: 109ff., 117f.). The manufacture, purchase and worship of the statuettes Vertet would see as suggesting their acceptance of the situation; on the other hand, the iconography of the ‘wet nurse’ figure might well also reflect some unconscious reaction against it as people, unable to act for themselves as adults, reverted to the dependency of childhood, and associated Rome with an image from a much older and more primitive religion than that of the Homeric pantheon (Vertet 1984: 113f., 119). In any event, they were not at ease with the world as they found it; for them, certainly, both materially and culturally, the Roman Empire was not a “good thing”.

If we accept Vertet’s contention that the Arvernian statuettes are acceptable in evidence for the “univers mental” (Vertet 1984: 107) of the bulk of the Romano-Gallic population, and his analysis of what they have to say, it would seem, despite the positivist argument proposed above, that for most people the Roman conquest was in both the short and long terms very much for the worse. In my opinion, Vertet’s ideas should be given serious consideration. However, I believe that the statuettes may be interpreted more favourably than he suggests. For reasons I outlined at the beginning of this paper, I

believe that Vertet has overstated his case for the material poverty of the Gallic peasantry. As far as the cultural side is concerned, despite my earlier acceptance of the victory of the Roman educational tradition over the Gallic, I would emphasise that not everything was swept away. It is a commonplace among archaeologists and historians that Rome was temperamentally inclined to respect *mos maiorum*, the ancestral tradition, as it applied both to her own society and even to those of her subjects. The provincial upper classes were expected to conform to the norms of Greco-Roman civilization; but this expectation was not to be taken by them as a directive totally to destroy their indigenous heritage. Rome's cultural imperialism was aggressive, but not ruthless: throughout the Empire much was changed, but much survived (cf. Millett above, p. 39). It may, indeed, be argued that native traditions enjoyed a higher than average chance of survival in the Three Gauls since, under the high Empire, the behaviour of the local Gallic aristocracy was even less damaging to the fabric of provincial society than that of their peers elsewhere. In brief, northern Gallic aristocrats remained close to home: as far as can be judged, from the late-first century, at least, they were not anxious to involve themselves in imperial senatorial or equestrian careers; they confined their activities to Gallic or *civitas*-affairs (Drinkwater 1983: 202). Furthermore, the relatively small number of Gallic *civitates* must have helped to prevent excessive spending by them on the embellishment of *civitas*-capitals, after the usual Greco-Roman fashion (Drinkwater 1983: 108f.; cf. Drinkwater 1984: 360); on the contrary, they can be seen concerning themselves with the administration and development of the subordinate tribal districts (*pagi*) and their *vici* (Drinkwater 1983: 108f.). Perhaps most interesting in this respect is the construction, very likely at the encouragement and expense of local aristocrats, of great rural shrines (*conciliabula*), surrounded by urban-style amenities (theatres, baths etc.), in many parts of Gaul (Drinkwater 1983: 181). The religious aspects of such patronage are particularly important in the context of this paper, the more so when there is other evidence to suggest that the Gallic aristocracy conscientiously maintained local cults (Drinkwater 1979: 94). The druids may have disappeared, but the main Gallo-Celtic deities, however Romanized and 'sanitized' they may have become, were kept firmly in the public eye. Aristocratic funding did not preclude, indeed (as a means of winning acclaim) it presupposed, active popular participation in their worship. As Vertet himself remarks, evangelising Christians were to discover this to their cost when they attempted to convert the Gallic country-dwellers (*pagani*) from the late-fourth

century onwards (Vertet 1984: 86f.). It was, therefore, possible for the peasantry to enjoy the peace and prosperity of Roman rule without totally losing its old beliefs and customs.



Fig. 14.3 Coin of Hadrian of the *PIETAS AVGVSTI* type showing of female figure and children (after Robertson).

On this view, the Arvernian statuettes may be taken as a set of devotional objects that demonstrates a positive appreciation of Rome and her Empire. To our eyes the ‘nursing mother’ appears cold and stiff, but we must bear in mind the relatively low level of artistry involved in the production of such pieces (cf. Vertet 1984: 106). We should do better to establish the models of such pieces: the images that both potter and customer had in mind when they made and bought these wares, and that allowed them to overlook their technical shortcomings. In fact, as Vertet is at pains to point out, the iconography of the Arvernian statuettes is strongly reminiscent of certain coin-types of the second century (in particular, as far as the ‘Venus’ figures are concerned, I would note the Hadrianic *Pietas Augusti* type (Fig. 14.3): *RIC* 2, p. 477, nos. 1030/1), that attempt to project a very positive and benign picture of the Empire and its rulers (Vertet 1984: 98-105, esp. 99). There is, however, an even more dramatic possible source of inspiration for the ‘nursing mother’ statuettes, apparently unnoticed by Vertet, namely the Augustan *Ara Pacis*, dedicated in 19 BC (Fig. 14.4). A sculptured panel on the east face of the outer wall of this monument depicts the promise of the New Order: a full-breasted young female, usually identified as Tellus/Italia, clasping two chubby babies (whom she seems about to suckle) in a scene of rural plenty. As far as the population of Gaul is

concerned, I would argue that, at least down to the mid-third century, this was a promise that was fulfilled.



Fig. 14.4 The Augustan 'Ara Pacis'

References

- Agache, R. 1975 'La campagne à l'époque romaine dans les grands plaines du Nord de la France', in H. Temporini (ed.), *Aufstieg und Niedergang der Antiken Welt* II.4, Berlin/New York, 658-713
- Agache, R. 1978 *La Somme préromaine et romaine* (Mémoires de la Société des Antiquaires de Picardie 24), Amiens
- Daubigney, A. (ed.) 1984 *Archéologie et rapports sociaux en Gaule*, Paris
- de Ste. Croix, G. E. M. 1981 *The Class Struggle in the Ancient Greek World*, London
- Drinkwater, J. F. 1977/8 'Die Sekundinier von Igel und die Woll- und Textilindustrie in Gallia Belgica', *Trierer Zeitschrift* 40/1, 107-25
- Drinkwater, J. F. 1978 'The rise and fall of the Gallic Iulii', *Latomus* 37, 817-50
- Drinkwater, J. F. 1979 'Local careers in the Three Gauls under the early Empire', *Britannia* 10, 89-100
- Drinkwater, J. F. 1982 'The wool textile industry of Gallia Belgica', *Textile History* 13, 111-28
- Drinkwater, J. F. 1983 *Roman Gaul: the Three Provinces, 58BC-AD260*, London
- Drinkwater, J. F. 1984 'Peasants and Bagaudae in Roman Gaul', *Classical Views* N.S. 3, 349-71
- Drinkwater, J. F. 1985 'Urbanization in the Three Gauls: some observations', in F. Grew and B. Hobley (eds.), *Roman Urban Topography in Britain and the Western Empire* (C.B.A. Research Report 59), London, 49-55
- Drinkwater, J. F. 1987a Review of Daubigney 1984, *Trierer Zeitschrift* 50, 472-4

- Drinkwater, J. F. 1987b Review of Wightman 1985, *Classical Views* N.S. 6, 383-9
- Hopkins, K. 1978 'Economic growth and towns in classical antiquity', in P. Abrams and E. A. Wrigley (eds.), *Towns and Societies*, Cambridge, 35-77
- Hopkins, K. 1980 Taxes Consequences of the Roman Conquest of Gaul and trade in the Roman Empire', *Journal of Roman Studies* 70, 101-25
- Ladurie, E. Le Roy 1987 *The French Peasantry 1450-1660* (trans. A. Sheridan), London
- Marx, K. and Engels, F. 1888 *Manifesto of the Communist Party*, London
- Millett, M. 1984 'Forts and the origins of towns: cause or effect?', in T. F. C. Blagg and A. C. King (eds.), *Military and Civilian in Roman Britain* (BAR British Series 136), Oxford, 65-74
- Mitchison, N. 1923 *The Conquered*, London
- Picard, G. C. 1981 'Ostie et la Gaule de l'Ouest', *Mémoires de l'Ecole Française à Rome* 93, 883-915
- Vertet, H. 1984 'Religion populaire et rapport au pouvoir d'après les statuettes d'argile sous l'empire romain', in Daubigney (1984), 72-122
- White, K. D. 1969 'The economics of the Gallo-Roman harvesting machines', in J. Bibauw (ed.), *Hommages à M. Renard* (Collection Latomus 101-3), Brussels, 804-9
- Wightman, E. M. 1975 'Priscae Gallorum memoriae', in B. Levick (ed.), *The Ancient Historian and his Sources: Essays in Honour of C. E. Stevens*, Farnborough, 93-107
- Wightman, E. M. 1985 *Gallia Belgica*, London

15. The Emergence of Romano-Celtic Religion

by Anthony King

A diffident approach to religious archaeology is manifest in the study of Iron Age and Roman Britain. The majority of archaeologists of these periods have little to do with religious material, which is considered a specialist preserve. Indeed, many are extremely wary of analysing the religious component of the material cultures they are working on, to the extent that in some studies the reader could be forgiven for thinking that ancient society was almost entirely secular. This type of approach to the subject has even been used for religious buildings and objects themselves, so that analysis is conducted purely in architectural or typological terms. As a consequence, the majority of sites and objects, unless displaying 'odd' characteristics, are presented as devoid of religious significance.

An example of this is the well/shaft problem, in which most deep holes in the ground are given a prosaic water-provision function unless their fill contains groups of objects that appear to be of religious or funerary origin. In these cases, there has in the past been the temptation to drop the well interpretation altogether, in favour of a ritualistic one, particularly if there are human remains which justify calling the hole a 'puits funéraire'. Specialists in religion have tended to make separate studies of these 'odd' deposits, with the result that many holes that quite obviously were wells or cess-pits before being filled have been deemed ritual shafts or the like. It is only fairly recently that archaeologists have started to recognize that a great many of the pits and wells that they excavate have deposits in them, e.g. of animal bones, that mark the ritual 'closure' of the hole at the time it was filled in. In other words, the past unwillingness to entertain the possibility of rituals affecting many apparently secular activities has created a false dichotomy, only now starting to disappear, between 'ordinary' archaeology and religious archaeology.

In the wider realm of synthesis of archaeological findings, the dichotomy still exists, to a great extent Ideas of social change and

political development in the Late Iron Age and early Roman periods have undergone several transformations in the last few decades, but religious ideas of change have not, still being discussed, for the most part, in terms of Roman toleration of native cults (with the notable exception of the druids) and of individual freedom of choice in the matter of religious belief. The aim of this paper is to make a brief and speculative contribution towards the understanding of religious change in the social and political context of the period.

Religion and the Iron Age/Roman core-periphery system

Currently, a view of the period's political and social framework that has become widely discussed, is that of Iron Age Europe as a core-periphery system, or rather, a series of such systems (Haselgrove 1984; Bradley 1984; Cunliffe 1984a). The Mediterranean cultures, Greek, Etruscan and Roman, according to this view in its simplest form, were powerful enough to have a marked effect on their neighbours, particularly in Gaul, Spain and the Alpine region. Economic links, principally in the form of raw materials being traded from periphery to centre, and luxury goods being traded in the other direction, paved the way for more extensive contacts, of craftsmen travelling to peripheral areas to execute commissions, for instance, or the gradual introduction of core-area cultural traits such as scripts and loan-words for the peripheral languages. A great many of the developments in pre-Roman Gaul and Britain in particular can be explained in core-periphery terms:

- the development of an 'archaic state' political formation in southern Gaul (Nash 1978),
- the acquisition of luxuries such as wine,
- the introduction of a coinage that was firstly sub-Greek and later more recognizably Roman in spirit,
- the use of Greek writing for local languages in southern Gaul, and later Latin script further north as Roman influence supplanted that of the western Greek colonies,
- the introduction of Greek-style urbanization in the oppida of southern Gaul.

In other words, before the Roman conquests of Gaul and Britain, there had been extensive infiltration of Graeco-Roman cultural patterns into Celtic society, with greatest effect on the more immediately peripheral societies and their tribal aristocracies. The latter appear to have controlled the flow of goods and ideas, and thus were most exposed to Mediterranean influences.

How does religion fit into this model? At present, it has to be said that virtually no consideration has been given to this matter, as much of the core-periphery model is conceived in economic terms only. However, if we take the operational aspect of religion to be rooted in the general cultural milieu of the society that practises that religion, then it is possible to make an association with the model. It is one that is potentially changeable through time, since significant changes in society, as outlined above, have the potential to transform the functioning of religion, either in reaction to these other changes, or to reinforce the ideological foundations for change.

In order to sustain such a proposition, it is best to follow a definition of religion that is couched in social and also material terms, rather than in terms of individuals and their beliefs (the most common current approach to the religions of the period), although it must be remembered that individuals both condition and are conditioned by the prevailing beliefs of the social group as a whole. Thus, to follow Geertz (1966, 26-9), there is a 'religious perspective' on the world by which sacred symbols are created as a focus for beliefs that serve to give 'reality' to existence. The beliefs themselves are of no absorbing concern here, given the paucity of the written sources for religious matters during the period under consideration, but the sacred symbols, specifically those that have material form, are accessible to archaeological study, given that, 'It is in some sort of ceremonial form...that the moods and motivations which sacred symbols induce in men, and the general conceptions of the order of existence which they formulate for men, meet and reinforce one another' (Geertz 1966, 28). In other words, since the materials available for study are largely the physical remains of rituals, an archaeological definition of religion is, perforce, more concerned with 'ceremonial form' than with 'moods and motivations', and therefore has to use the former effectively as a substitute for the study of beliefs.

'Ceremonial form' in Celtic and Romano-Celtic religion means essentially the shrines themselves, their cult-images and votive offerings. Our immediate problem is how to use the data offered by these categories for the exploration of the theme given above – the integration of religion into current models of interaction between the Iron Age and Mediterranean worlds.

'Celtic' and 'Roman'

A possible approach is to try to define 'Celtitas' as seen in the earliest relevant remains, and assess how far the data from the period of contact between the Graeco-Roman and Celtic cultures differ from

this, i.e. whether and how far 'Romanization' of the Celtic religious form took place. Methodologically, this uses the device of an opposition between 'Celtitas' and 'Romanitas', as far as these terms can be applied to religion. It is an approach that owes much to ideas emanating from structural anthropology, as reworked by archaeologists such as Ian Hodder (1982,185ff.), and put within an historical archaeological framework by Donley (1982) and Small (1987).

The core-periphery model for the north-west European Iron Age would predict that the 'Celtic' element would be partially or completely subsumed by the 'Roman', from which it follows that sacred sites and objects can be placed on a 'Celtic-Roman gradient' according to the extent of 'Roman' influences. This in turn allows for comparison with non-religious sites and material culture, for instance in terms of whether ceremonial form was conservative or progressive in the take-up of 'Roman' ideas. This particular question is of some interest, in that a commonly-held viewpoint on religion in general is that it is conservative in nature, and is used as a means of upholding tradition. This viewpoint has a respectable ancestry going back to the ancient authors themselves (North 1976, 1-2), but we have to question whether it held true for all cultures in all periods, or whether religious change facilitated adaptation to sometimes unpalatable cultural changes.

M.J.T. Lewis, in a famous phrase, characterized Celtic religion as 'essentially aniconic and atectonic' (1966,4). His view was based on the description of cult sites by Livy, Lucan, Pliny and others, who tended to portray Celtic worship in sacred groves, with wooden cult-images, altars dripping with offerings and human sacrifices taking place. This evocative and sometimes spectacular ancient portrayal is, of course, shot through with prejudice, and is probably a literary conceit, but it appears to have a kernel of truth, deriving from observations of the Celts in Italy in the 4th-3rd centuries BC. Early Irish texts provide some confirmation of the Classical evidence, although they are not very specific in describing the material side of Celtic religion, and are distant in time and space from the period under discussion (*cf.* Chadwick 1970, 141ff. and Ross 1986, 101ff). It is possible to dispute the aniconic nature of Celtic religion on the basis of the known reverence for the severed head and its portrayal in a variety of media (Ross 1986, 117-9), but it can equally be suggested that the iconic habit was strongest in areas known to be influenced by Mediterranean cultures (see below). Iron Age temples, too, are known both in literary sources and from archaeological discoveries, but are

also to be found mainly in the same areas.

In Graeco-Roman religion, by contrast, there is an early attachment to monumental structures built to house deities portrayed in recognizable human guise. Stone was the preferred material for both structures and images, resulting in a highly elaborated architecture and iconography at the time of the main period of contact between these peoples and the Celts (*cf.* Stambaugh 1978, 568ff.). Another feature of Graeco-Roman religious practice, not found in Celtic religion, is the use of writing and inscriptions to codify and commemorate.

Although distinctive areas of contrast exist, and can be tabulated as oppositions in [Table 15.1](#), many features of religious material culture are the same, notably the use of sacred areas with specific delimitation (Piggott 1978), the practice of sacrifice as the main means of propitiating deities, and the existence of specialized officiants (and their paraphernalia) to carry out rituals and preserve religious knowledge. Since these aspects are common to both systems, they consequently do not need to be considered further in any detail. It is in the areas of temple structures, cult-images and inscriptions that elements of Romanization of Celtic religion are to be found, thus defining the material on which we need to concentrate in order to pursue the theme of this paper.

Celtic open-air shrines partial aniconism oral teaching	Roman roofed temples anthropomorphic cult- images epigraphic tradition	Common to both delimited cult areas sacrifices and votive offerings specialised officiants
--	--	--

Table 15.1. Traits of Celtic and Roman Religious practice

	<u>S Gaul</u>	<u>Three Gauls, Germany</u>	<u>Britian</u>
1. purely 'Celtic'	up to C1 BC (literary evidence only)	up to C3 BC	no evidence
2. tectonising & anthropomorphising	C3?-C1 BC	C2-C1 BC	C1BC
3. proto-Romano- Celtic	mid-late C1 BC	late C1 BC -early C1 AD	early C1 AD (little evidence)
4. Romano-Celtic	late C1 BC+ (little evidence)	early C1 AD+	mid-late C1 AD+
5. 'Roman' element dominant	late C1 BC+	late C1 AD+ (limited in scope)	no evidence

Temples

Early Iron Age religious structures dating to Hallstatt D and La Tène I in Celtic Europe are rare, but the diverse sample available points to open-air sanctuaries. The most famous site is in Czechoslovakia at Libenice (Rybova and Soudsky 1962), where a long rectangular enclosure contained an area of ritual activity at one end, centred upon stones and apparently free-standing posts. This site, unfortunately, has no clear descendants in later La Tène periods, an observation that also applies to the Golring in the Rhineland (Röder 1948), a circular enclosure c. 90m in diameter centred on a large post possibly c. 12m in height.

Some scholars (e.g. Schwarz 1962; De Laet 1966; Black 1986, 229) have seen the origins of what was to emerge as the Romano-Celtic temple type, not in these styles of open-air sanctuary, but in the La Tène funerary enclosures of NE France, e.g. Ecury-le-Repos (Brisson and Hatt 1955) or Menil-Annelles (Flouest and Stead 1979), where a square enclosed feature within a cremation cemetery has structural elements which may represent a small central wooden building. It is difficult to see the exact linkage, since the post-hole formations of the funerary monuments are not regular, and are open to several alternative reconstructions (e.g. platforms for the exposure of corpses; Brunaux *et al.* 1985b, 49-50), but there is obviously the possibility that this hypothesis for the development of temples is correct. A salient observation that appears to diminish support for the hypothesis is that temples and cemeteries are not normally found together in either the late Celtic or Roman worlds, although mausolea could take the form of temples (e.g. Lullingstone; Meates 1979, 122ff.). Structures in cemeteries are more likely to have been derived from temples than the other way round.

Evidence for late Iron Age sacred sites is, more often than not, in the form of square or trapezoidal enclosures. These take a variety of forms and modern names (*Viereckschanzen*, *enclos cultuels*, etc), and have been shown by Schwarz (1962) and more recent work (e.g. Planck 1986; Slofstra and Sanden 1987) to have a distribution from Czechoslovakia to Gaul and southern Britain. Examples that have been dated indicate that a range from third-first century BC is typical, with some sites occurring during the early Roman period as survivals of the type (e.g. in the Low Countries: Slofstra and Sanden 1987). As stated in the previous section of this paper, the concept of an enclosure as sacred delimiter is common to both Celtic and Mediterranean areas,

and consequently will not be discussed in any detail here. Of more significance in the present context are the internal features of some of these enclosures, including shafts, settings of wooden posts, and buildings. Post-built wooden buildings of carefully-constructed, apparently basilical, rectangular plan have been excavated at various sites, notably at Holzhausen in southern Germany (Schwarz 1962) and Mšecké Žehrovice in Czechoslovakia (Venclová 1989). Both these instances are of an early enough date (c. third-first century BC) and in regions sufficiently distant from the Mediterranean sphere of influence to be unlikely candidates for the early Romanization (or Hellenization) of their architectural form. Thus, this immediately raises the hypothesis that the tectonizing trend in late Celtic religion was a native, rather than externally-inspired phenomenon.

Paradoxically, despite their high-quality evidence, both the sites just mentioned lay in areas that were to be on the fringes of the more westerly region that developed as the heartland of Romano-Celtic religion. Events at the end of the pre-Roman Iron Age – expansion of Germanic groups southwards, and Roman military operations – caused severe diminution of any possible influence that the eastern Celts might have had on the Celtic world at large. Descendents of the *Viereckschanze* buildings are virtually absent, although possible basilical Romano-Celtic structures exist at one or two sites, such as Pesch in the Rhineland (Home and King 1980, 447, Pesch B; Follmann-Schulz 1986, 706, Gebaude B). Because of this lack of continuity, in order to pursue the aim of documenting the influence, if any, of the Mediterranean world on Celtic temples, the geographical focus has to be narrowed down to Gaul, where disruption at the end of the Iron Age was less radical, and where Romano-Celtic forms clearly emerged at an early date.

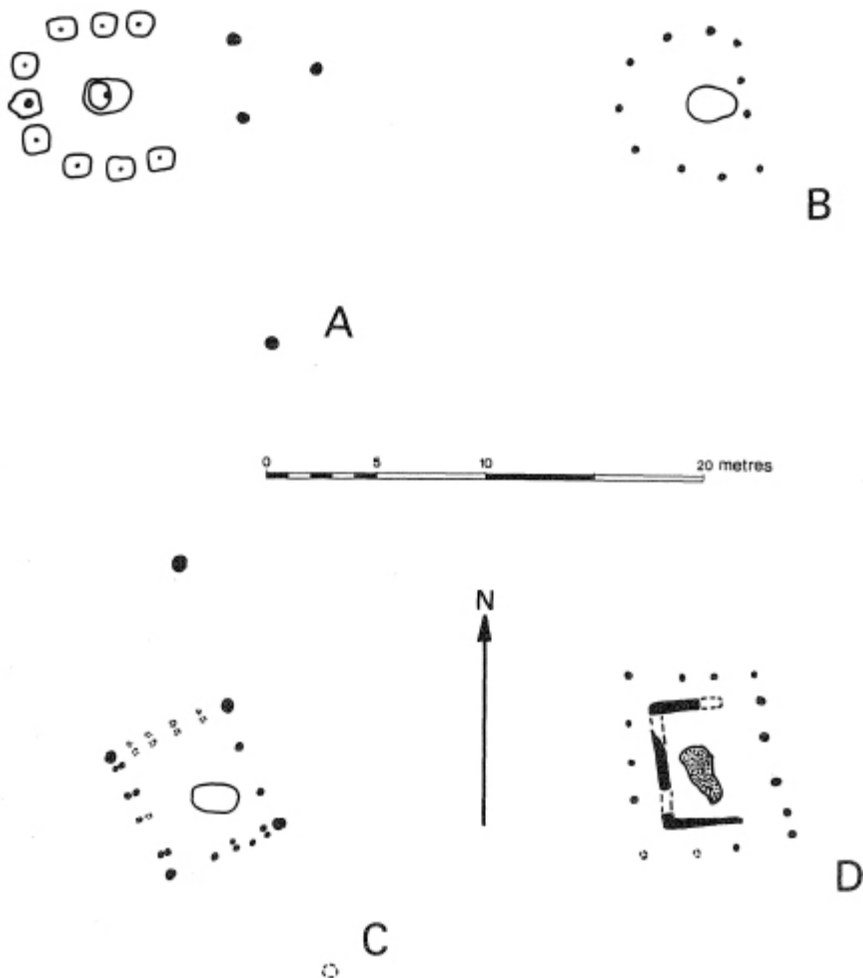


Fig. 15.1. Gournay-sur-Aronde

Legend: A. third century BC, B. second century BC, C. late second-60s/50s BC, D. 40s BC.
(After Brunaux *et al.* 1985b)

A key site for understanding the way in which structures came into being at Gaulish sanctuaries is the recently-excavated Gournay-sur-Aronde temple in Picardy (Fig. 15.1: Brunaux *et al.* 1985b). The earliest phase is third century BC, consisting of a ditched enclosure around a cross-shaped setting of posts, carefully arranged, but too widely-spaced to have been supports for a coherent structure. They

were probably free-standing, not unlike the early Iron Age structures mentioned above, and had an intimate relationship with a group of nine pits dug around a central pit. The pits follow the orientation and east-west axis of the post settings, and appear to have been added to the ensemble not long after the posts were put in position. The pits are not considered by the excavator to have held structural elements, although small, probably free-standing posts, c. 10 cm in diameter, were carefully positioned in each one. The symmetry of the early phase structures suggests that the individual positions of the posts were important in creating a ritual environment for the sacrifices that were taking place, remains from which were found in profusion in the enclosing ditch.

Succeeding this initial open-air sanctuary was a tectonizing phase. The pits had been largely infilled when new posts were positioned in or very close to them, probably in the second century BC. It is not certain that this irregular D-shaped group of posts in fact supported a roofed building, as put forward in Brunaux's discussion (Brunaux *et al.* 1985b, 85), since the apparent continuity with the system of pits and free-standing posts in the previous phase suggests that this may more easily be interpreted as a reconstitution, on a somewhat less regular basis, of the free-standing arrangement after the original posts had rotted. However, the next structure on the site is much more clearly a building, roughly square (6-6.5 m on each side) with corner posts and smaller post-holes for walling in between. It enclosed the central pit, which was still in use, and opened to the east, on the same general orientation as the earlier phases. The construction date for this building is uncertain, but is in the range late second to early first century BC.

The early temple at Gournay lasted until the 60s or 50s BC, when there was a fire, followed by deliberate demolition, clearing away of the ritual deposits and sealing of the site with a sterile layer. Reconstruction followed after an indeterminate interval of perhaps ten years or more. However, the old temple's site was known, since a new stone-built structure was set up in the same position and on almost the same orientation. The central pit, too, was replaced by a hearth in the same position. The only major difference in the sanctuary as a whole was the abandonment of the enclosure ditch and its replacement by a rectilinear ditch on the same orientation as the temple itself. The inference is that there was continuity of cult, even if the surviving material sequence shows a discontinuity. In this context, it is all the more relevant that the architecture of the new temple can be regarded as proto-Romano-Celtic, taking the form of a stone-footed cob wall for

a rectangular *cella* open to the east, surrounded by a wooden ambulatory. Its date, too, is significant, being just post-conquest, perhaps in the late 40s BC, thus making the temple one of the earliest stone-footed structures in the newly- conquered territory.

The technique of cob or mud-brick on stone foundations is known in southern Gaul from a much earlier date, and can be regarded there as a manifestation of Gallo-Greek culture. It subsequently appears in first century BC and Augustan buildings in Roman towns (e.g. Lyon; Desbat 1981), and probably marks one of the elements in the Romanization of architecture, as techniques in use in southern Gaul came into Gallia Comata. The inference for Goumay, therefore, is that this phase is a Romanizing one, concurrent with the material culture facies in northern Gaul that goes under the name of '*gallo-romaine précoce*'. The opportunity for reconstruction of the temple presented by the mid first century BC fire was taken by setting up a building to a new design, not in conservatively maintaining the old features of the sanctuary. The cult itself may not have been affected by this, since the same position for the temple and the continued use of the central pit/hearth demonstrate an essential continuity of certain key features. Nevertheless, the material surroundings and possibly the ceremonial form of the cult did change, with a greater emphasis on the physical structures, and an apparent lessening in the number of sacrificial remains. This new emphasis on structures at Gournay is an early example of a widespread phenomenon in Romano-Celtic religion, to be discussed more fully below.

Goumay is not an isolated instance, since there are other sites in northern Gaul and south-eastern Britain that demonstrate similar sequences, though admittedly less fully or perfectly (e.g. Tremblois: Paris 1960; Vendeuil-Caply: Piton and Dilly 1985; see note 1 for other temple sites with definite pre-Roman traces). Goumay also has an advantage over most of the other sites in having been burnt down in the mid first century BC (for unknown reasons), which allowed for a relatively early rebuilding in proto-Romano-Celtic style. Elsewhere, this stage of development is usually later, and the temples more fully Romano-Celtic in form. We therefore have a privileged glimpse into a vital and fast-moving period of transition, during which the Romano-Celtic type was becoming established as the normal form of sanctuary building in Gaul.

By the late first century BC-early first century AD there were evidently numerous examples of wooden or stone, roofed shrines in Gaul, which were the outcome of a tectonizing trend during the first

century BC in Celtic religious architecture. The question inevitably arises as to the impetus which led to this trend being established – was it due to local innovation, or, as suggested by the core-periphery model, a result of Mediterranean influences? To support the latter notion, some elements of the classical temple types would have to be present in the Iron Age precursors to the Romano-Celtic temple, and the immediate contact zones should have the most highly-developed or the earliest examples of such temples. Accordingly, it is from southern Gaul that evidence, if any, will be forthcoming.

There are two striking features about what was later to be called Gallia Narbonensis in the third-first centuries BC; the extent of Greek influence, as manifested in Gallo-Greek culture, and the wide variation between those sites that display a high level of Graeco-Roman culture (e.g. Glanum), and those that remained almost untouched by it right up to the end of the republic, such as the defended sites in the pre-Alps. In religion, this variation is seen in the presence during the first century BC of four different but contemporaneous modes of ceremonial form.

1) Open-air sacred woods with no structures, but with wooden images, as attested in, for instance, Lucan's flamboyant account of Caesar's destruction of a shrine near Massalia in 49 BC (*Phars.* 3, 399-426).

2) Stone versions of the open-air shrines, with details of architecture and sculptural technique that owed much, originally, to Greek (and Etruscan) influence. They had stone lintels, tall *stelae*, free-standing painted stone sculptures and occasionally columns with distinctively-styled capitals. At the same time, there are many severed heads, either of stone, or human skulls placed in niches in the structures. The statues have a distinctive cross-legged pose, and sometimes are depicted holding severed heads. Dating of these sites and associated artefacts is uncertain, but it is accepted that the best-known of them, Entremont (Lantier 1943; Benoit 1981) and Roquepertuse (de Gérin-Ricard 1927), were probably destroyed during the Roman intervention of 125-4 BC. However, the lintel with niches for human heads at Glanum (Rolland 1968) may have been in use later than this, and at La Cloche, Pennes-Mirabeau, cross-legged statues and skulls with metal fittings for display formed part of the assemblage of a site apparently destroyed at the time of Caesar's siege of nearby Massalia (Chabot 1983).

3) Primitive temples, of which three are tolerably well-known ([Fig. 15.2](#)): a) Nages hillfort, near Nîmes, has a rectangular stone room with

a tiled roof surrounded by a portico that made use of stone column shafts (Py 1978, 88-90). The structure is interpreted by the excavator as a version of the cella/ambulatory temple that becomes the standard Romano-Celtic type. It is dated 70-30 BC, and stands enclosed by other buildings within the highly-regulated Hellenistic-style *insulae* of the hillfort; b) at Aumes, Hérault, a first century BC temple of square plan had three columns on each side, with possible curtain walling between them. The one surviving capital was in an unusual local style with a Gallo-Greek inscription (Home and King 1980, 379); c) the third temple at Vieille-Toulouse is the most significant, in that it has a claim to be the earliest known example of a regular cella/ambulatory temple. It was built of brick with columns around the ambulatory, and a curtain or dwarf wall between the columns (Vidal 1973; 1987; *Gallia* 34, 1976, 482-3). This site may be associated with a Latin inscription of 47 BC (*CIL* XII, 5388), and more certain dating evidence comes from pottery of the period 30-10 BC in an apparently overlying destruction layer.

4) Greek and Roman temples existed, of course, at Massalia, Narbo and other colonies, but there is epigraphic evidence from the Greek temple of Aristeia, Iles d'Hyères, for Gauls worshipping there (Coupry and Giffault 1982), and it would seem very likely that Gauls were present at the urban temples, too.

Eventually, the last group became the dominant form in southern Gaul, and largely supplanted the native types as far as the outward, physical manifestation of religion was concerned.

Of more immediate concern, however, are the possible links between the early Romano-Celtic temples in the south and the classical forms of temple. Wheeler (1928, 317), Lewis (1966) and others have pointed out that the Romano-Celtic form had some resemblance to Greek temples, mainly in the peripteral arrangement and the use of columns. Two key features, on the other hand, do not have any known link with Greek temples; the generally square concentric plan, and the tower-like cella (*cf.* Wilson 1980). Indeed, these are the very characteristics that mark out Romano-Celtic temples as a regional type, and it has to be admitted that the present state of knowledge of the earliest examples does not allow us to pinpoint any particular source of origin for these features.

A hypothesis that would account for the distinctiveness of the Romano-Celtic temple, within the context of the Hellenization of late Celtic southern Gaul and the general suppositions of the core-periphery model, is one where the shrine layout is essentially local,

answerable to Celtic ceremonial forms, but where the details respond to cultural changes in society as a whole, hence what is effectively a process of accretion of initially Greek and later, Roman stylistic features. A parallel for this comes from the Etruscan world, where shrines of a characteristic local form, with high *podia*, shallow *cellae* and frontal steps (developed from altar platforms), have markedly Hellenized details in the form of columns, terracotta pediments and stone sculpture (Colonna 1985; Strong 1968, 69). These details become crystallized as normal features of the Etruscan temple type, and can be seen as a facet of the deeply pervasive Hellenization of Etruscan culture.

In conclusion, Gaulish temples that can be regarded as antecedents to the Romano-Celtic type can be placed in the period just before the period of the Caesarian conquest or later. In Britain, all could be put into the post-Caesarian period (except possibly Heathrow²). However, the evidence from northern Gaul and Germany also suggests that there is a phase prior to the regularization of the antecedent to the Romano-Celtic type. In this earlier phase, probably to be dated to the second-early first centuries BC, there are structures of irregular plan, which seem to indicate the building of shrines before any Graeco-Roman influences could reasonably be said to be a relevant factor. Although it is not certain whether all these irregular structures were roofed, it is best to conclude that the tectonizing trend was not directly influenced by knowledge of Mediterranean religious architecture. However, it is much more likely that the regularization of the temple type did in fact come about as a result of such knowledge, firstly in the immediate contact zone on the fringes of Gallia Narbonensis, and later in the rest of Gaul.



Fig. 15.2. *Early temples in southern Gaul*

1. Nages (after Py 1978), 2. Vieille-Toulouse (after Vidal 1973 and *Gallia* 34, 1976, 482-3)

Cult-images and Inscriptions

In a similar manner to early Celtic shrines, early iconic representations do not have clear links with what was to emerge in late La Tène. Hallstatt D/La Tène I statuary such as the Hirschlanden figure (Zürn 1964) exist in apparent isolation as far as stone representations are concerned, since most Celtic anthropomorphic figures are late La Tène or even Roman in date. However, it is relevant to point out that Lewis's characterization of Celtic religion as essentially aniconic must be tempered by the existence of the human form, notably the head, in La Tène art (Megaw 1970; Ross 1986). Connections between La Tène art and Celtic religion can not be appropriately discussed here, nor, indeed, can the Greek influences on the emergence of La Tène art styles, but there are three specific points that should be made:

1) The early free-standing representations, such as Hirschlanden, occur in an area that was notable for its precocious links with the Greek world, within the framework of a prestige-goods economy (Collis 1984, 82 ff.) that acted as a channel for Greek influences into a key region for the development of Celtic culture in the late Hallstatt and early La Tène period. It has often been noticed that the Hirschlanden figure resembles a local version of a Greek *kouros* figure.

2) By the time late Celtic (and early Roman) religious statuary comes into being, the typical La Tène styles are generally agreed to be in decline in Gaul (but not in Britain).



Fig. 15.3. Glanum: reconstruction drawing of cross-legged statue on pedestal (after Rolland)

3) The area in which specifically religious, free-standing stone sculptures are first commonly met with in the mid-late La Tène period (3rd-1st century BC) was in southern Gaul and the lower Rhône Valley, the main contact zone with the Mediterranean world. However, this area also appears to have been culturally marginal to La Tène civilization as a whole, often being referred to as Celto-Ligurian rather than Celtic. It is not certain how influential its culture was on the Celtic heartlands, unless it was the case that artistic ideas emanating from southern Gaul found favour in the north by being linked with the general flow of goods, services and ideas from the Graeco-Roman world into Gaul.

The sculptural style of the Rhône Valley cross-legged statues, typified by examples from Entremont and Glanum ([Fig. 15.3](#)), is curiously reminiscent of archaic Greek sculpture, despite being several centuries later. It is not easy to account for this feature, but the statuary as a

whole shows essentially the same characteristic as the temples in having a distinctive local form not found elsewhere (i.e. the cross-legged pose), but depicted and detailed in Greek style.

This iconic form is also known further north (e.g. Argenton-sur-Creuse: Argenton Mus.; Etaules: Espérandieu 1910, no. 2218), but the examples cannot be dated earlier than the Roman period. Indeed, it is difficult to date any of the other stone representations precisely, but those from central and northern Gaul are generally considered to be ultimate La Tène or early Roman period. The wooden anthropomorphic religious sculptures from sites such as Chamalières (Romeuf 1986) and Sources de la Seine (Deyts 1983) are also dated to the early Roman period.

It seems, therefore, that free-standing cult-images in anthropomorphic form are late in date, although the dating is imprecise, and they emerge first in southern Gaul, as a manifestation of Gallo-Greek culture.

Inscriptions are also first encountered within the *milieu* of southern Gallo-Greek culture (Lejeune 1985). The earliest example is on a third century BC column capital from Montagnac, Hérault (Lejeune 1985, G-224)), in Gaulish using Greek script. Most Gallo-Greek inscriptions are second-early first century BC in date and are either funerary *stelae* or graffiti on pottery. In the context of Celtic religion they scarcely figure at all, and it appears that Gallo-Greek inscriptions are a short-lived phenomenon, being almost universally supplanted by Latin inscriptions from the late first century BC onwards. In contrast to the former, Latin inscriptions are used in religious contexts, while Gallo-Latin inscriptions are very rare. This would suggest that the advent of epigraphy into Romano-Celtic religion was late compared with the development of temples and cult-images, for although there was an epigraphic tradition in southern Gaul, this did not really impinge on religious practice. After the Roman conquest of northern Gaul, the epigraphic tradition that developed was a Latin one, using the standard formulae of Latin religious inscriptions within a Romano-Celtic framework.

The emergence of Romano-Celtic religion

The way in which temples, anthropomorphic images and, at a later stage, inscriptions came into use on late Iron Age and early Roman period sacred sites has been presented above, and we have seen that there are a number of features which support the hypothesis that Graeco-Roman influence played an important role.

This role continued and intensified after the conquest of Gaul by Caesar and after the invasion of Britain in AD 43. Romanization across virtually the whole spectrum of cultural life at this time was probably closely connected with the destruction of Celtic 'warrior culture' and the need for tribal élite groups to find new social positions and rituals as a means of maintaining and legitimating their status within the newly-founded provinces. The flowering of Romano-Celtic religion from the Augustan period in Gaul and the Neronian period in Britain was an important manifestation of these changes.

Temples were amongst the earliest stone structures to be erected in northern Gaul and Britain, nearly all of them following the Romano-Celtic pattern (e.g. Elst: Bogaers 1955; Hayling Island: King and Soffe 1990; Colchester-Sheepen: Crummy 1980). At Hayling Island, the transition from a pre-Roman to a Roman shrine can be documented, since the pre-Roman circular wooden temple was removed c. AD 60-70, and a large stone temple of similar plan set up in its place (Fig. 15.4). Construction work on the new temple was contemporary with other projects within the tribal territory (e.g. the proto-palace at Fishbourne), and reflects the rapid pace of Romanization in this pro-Roman area. For the worshippers at Hayling, the large new temple, at least twice the volume of the old, and in a different and very new building style, must have decisively altered the ceremonial form of the cult from one that was Celtic to one that was now firmly Romano-Celtic. An important feature is that the change marks an emphasis now on the structure and appearance of the temple rather than on the votive offerings, which decline in variety and status (a development paralleled in Latium in the late Republic: Blagg 1985). Metalwork, for instance, was less common than previously, and the wealthy warrior element almost entirely absent. It seems that the construction of conspicuously Romanized buildings was a new form of status display at this time, and that temples such as Hayling were in the forefront of this trend.

Hayling Island temple may also provide a clue as to why this should have been so. The Roman phase cella can be reconstructed as a tall cylindrical tower, probably higher than the overall diameter of c. 13 m., on the basis of surviving examples from south-west Gaul. This reconstruction as a tower *cella*, of course a feature shared by Romano-Celtic temples of more typical form, is of interest when put in juxtaposition with the pre-Roman reconstruction, since the latter seems to have been no more substantial than a typical Iron Age round-house (Fig. 15.5). Superficially, this may suggest that the stone phase in fact reflected a difference in religious approach, despite the

continuity of the site and the ground-plan. A possible explanation, however, is that there was some formal element in Celtic religion that made tower-like structures desirable, which could only be properly realized when Roman construction methods became available. This may account for the relatively early stone phases of many Romano-Celtic temples, since there could have been ritualistic as well as social reasons for Romanizing the temples. If this was the case, it can be suggested that Celtic religion only reached its fruition in structural terms in the Roman period, and it can be argued that the Roman element in Romano-Celtic religion is no mere veneer over a conservative Celtic base, but marks a decisive stage in development.

This, in fact, has previously been suggested for religious sculpture, since it was only from the early Roman period that the full variety of Celtic religion began to be revealed and depicted (Green 1986, 35, 102; Henig 1984, 39). Thevenot has commented on this as the exteriorization of Celtic religious feelings in the Roman period (1968, 233). It was an exteriorization, however, that was ambiguous semiotically, since certain signifiers (e.g. sculptural technique, architectural detailing) proclaimed themselves as 'Roman' to worshippers, while others (e.g. iconography, elements of the architectural form) looked back to the pre-Roman 'Celtic' world.

The problem of the druids

At this point it is necessary to consider one of the very few aspects of Celtic religion to be directly affected by Roman official intervention; the suppression of the druids (*cf.* Piggott 1974, 108-11; Zecchini 1984; Clavel-Lévêque 1985; Guyonvarc'h and Le Roux-Guyonvarc'h 1986, 437-42). The bald facts are that Augustus banned Roman citizens from following the *religio druidarum* (Suet., *Claud.* 25, 5), that under Tiberius a decree of the Senate was passed against the druids and related diviners (*vates*) and healers (*medici*) (Pliny, *H.N.* 30, 13), principally on account of their practice of human sacrifice, that Claudius abolished the 'cruel and inhuman religion of the druids in Gaul' (Suet., *Claud.* 25, 5) in AD 54, and that Suetonius Paulinus attacked Anglesey, a centre of druidic power and resistance to Rome, in AD 59-60 (Tac., *Ann.* 14, 30). At face value, this appears to represent an onslaught, apparently for moral but also for political reasons, on both the officiants of Celtic religion and at the same time, certain major facets of the rituals practised, notably human sacrifice.

The implication for the archaeological evidence is that we should expect to find a diminution of traces of Celtic religion during the first half of the first century AD, or at the least major changes in the

physical manifestations of ceremonial form, because of the banning of the religion's officiants. For some sites, this may be the case, notably at Ribemont-sur-Ancre, where in La Tène III, a large mound of possibly sacrificial human bones occupied a prominent position in the temple. The mound was burnt and partially destroyed soon after the Roman conquest (Cadoux 1984), to be followed by an Augustan and later, Romano-Celtic temple complex. The excavator of Goumay, too, suggests that the Augustan phase temple was abandoned in the early first century AD due to the anti-druid decrees (Brunaux *et al.* 1985b, 115-6). However, the great majority of sites record no major changes of this sort during this period, and indeed, many of them go on to establish stone-built Romano-Celtic temples. There is, therefore, an apparent contradiction between the historical evidence, which suggests confrontation and opposition to Rome's influence, and the archaeological evidence, which suggests Romanization.

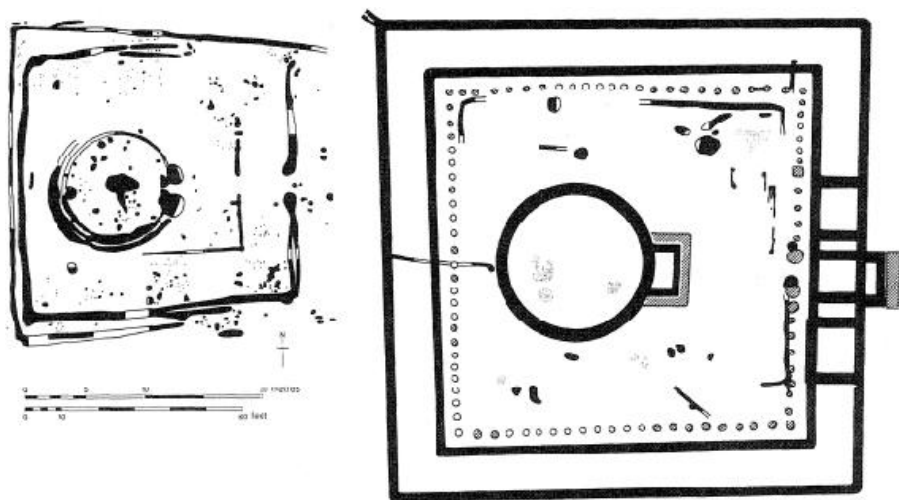


Fig. 15.4. Hayling Island

A. Iron Age, B. early Roman (after King and Soffe 1989)

There are two possibilities for resolving this dilemma, by proposing either that the *religio druidarum* was not in fact the same as mainstream Celtic religion as represented by the temple sites, or that the effect of the Imperial decrees was less than the sources would have us believe. The latter proposition is preferable, since most ancient and modern commentators place the druids in a primary and privileged position as the priests of Celtic religion. Like many other Roman laws, anti-druid decrees were probably unenforceable, while there is the suspicion that they merely acted as a moral gloss on the much more

important general changes in society that Romanization was bringing about. If this was the case, therefore, it can be suggested that the Romanization of Celtic religion would eventually have harmonized Celtic and Roman norms of ritual practice, without the specific Imperial intervention that actually occurred. Nevertheless, the fact that the decrees were issued at all shows how important the Roman state regarded religion as an arbiter of *mores* and as a focus of power. It is very likely that druidic priesthoods were regarded as similar to Roman priesthoods, with political as well as religious prestige accruing to the holders.

Arguably, the anti-druid decrees can be seen as one side of a concerted bid by the Romans to obtain religious power in Gaul, and thereby sanctify their presence and authority in the province. The other side of this coin was the setting up of an alternative focus of ritual, the Altar of the Three Gauls at Lyon in 12 BC, and the other provincial altars in Germany and Britain (Fishwick 1972; 1978; cf. also Price 1984, ch. 9), which from the mid first century AD were having a marked effect on provincial religion, as attested by the numerous dedications at Romano-Celtic temples that include the divine Augustus (or a similar formula) as well as the local deity (e.g. Allonnes: Térouanne 1960; cf. Raepsaet-Charlier 1975). Viewed in this perspective, the measures taken against the druids can be seen as just one aspect of the Romanization of religion, but at the same time they raise another issue, not so far considered, of whether the Romans really took the *laissez-faire* attitude often attributed to them in religious matters. Attempts to do away with a potential source of resistance to Rome (cf. Bowersock 1986; Momigliano 1986) and at the same time the provision of an alternative ritualistic focus were clearly officially promoted, and can even be conceived in terms of a 'policy' as far as this concept can be applied to Roman government. Augustus's ban, in particular, can be envisaged as a move to deny indigenous religious power to aspiring Roman citizens in Gaul, and the establishment of the new provincial cult as a controlled and Romanized alternative.

Later Romano-Celtic religion

Such actions by the Roman state probably did not have much immediate effect on the day-to-day veneration of local deities in Romano-Celtic temples, and even in cases where druids in fact ceased to officiate at rituals, a very similar priesthood must have been created to provide the continuity of ritual that is evident at so many temple sites. The long-term effects of official intervention, however,

were more subtle, for, as Wightman observes (1985, 186; 1986, 549; cf. also Carré 1978, 124-5), relief sculpture of deities at first depicts native gods (e.g. Cemunnos) in original iconographic poses, albeit in a Romanized artistic style, but from the late first century AD, more Romanized attributes appear and the deities are shown as more 'Roman' than before. This would seem to reflect a change from the conscious development of a native iconography during the first century or so after the Roman conquest, to a more general acceptance of classical models as the norm for religious depictions. This also applies to the formulae used in epigraphic dedications (Raepsaet-Charlier 1975; Carré 1978), and there is an element of the same trend in temple architecture, too, since several Romano-Celtic temples are constructed with imposing classical façades at this time (Horne's classicized type; Home 1986), and there are some instances of Romano-Celtic temples being replaced by classical-style buildings, notably Augst-Schönbühl (Laur-Belart 1978, 79-85) and Faimingen (Weber 1981), but also, unusually, the rural temple sites of Antigny (Richard 1988) and Masamas, Saint-Léomer (de Lavergne *et al.* 1982). These replacements mark the apparent abandonment of Romano-Celtic cults in favour of more classical ones, but Bath may be the unique case of a classical temple constructed *de novo* for a Romano-Celtic cult (Cunliffe and Davenport 1985; Cunliffe 1986).

These developments during the early Empire mark the normalization of provincial religion in the Celtic provinces. What had previously been regarded as a certain level of antagonism between the Roman and Celtic religious worlds evaporated with the political neutralization of the druids, and a synthesis emerged, based mainly on Romanized Celtic models that had been developed in the late first century BC-early first century AD. Iconography, architecture and epigraphy for Romano-Celtic cults were drawn freely but somewhat eclectically from Roman sources to create what is known, rather erroneously, as *interpretatio romana*. At the same time, Celtic cults lost whatever cultural integrity they may have had, as they reflected more the north-western provinces' version of the Empire-wide religious *koiné*, itself a manifestation of a Roman culture that created conformity but allowed local variation within limited constraints. This could be called cultural or even religious imperialism, operating through the creation of a power structure that encouraged competition for positions and status by emulating Roman ways, in religion as well as more mundane affairs (hence Tacitus's famous remarks in *Agric.* 21).

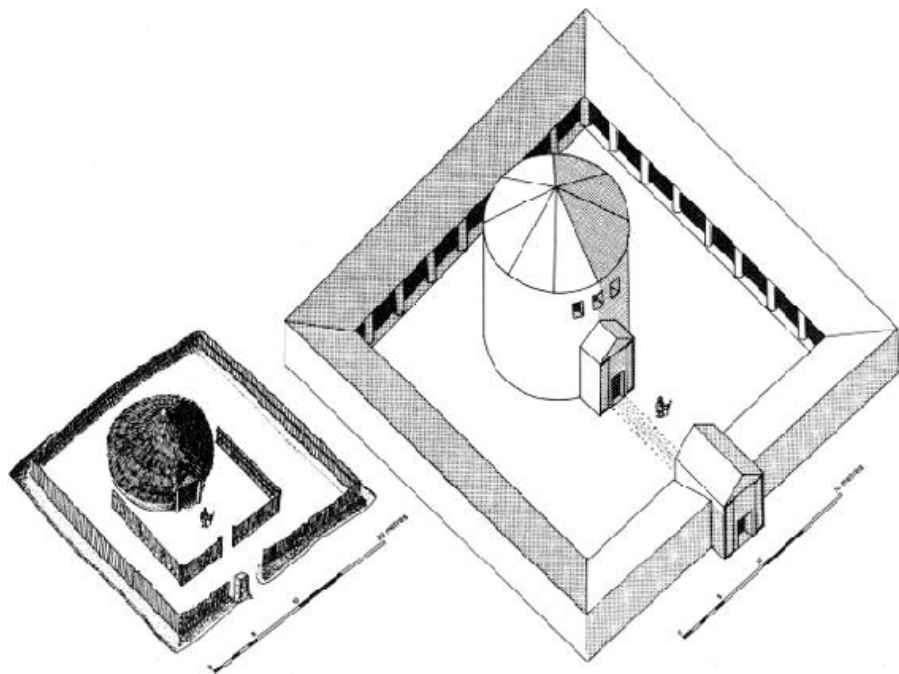


Fig. 15.5. Hayling Island: reconstructions of the Iron Age and Roman phases given in [Fig. 15.4](#).

From this period, therefore, Romano-Celtic temples and material remains become a regional ‘type-fossil’, characteristic of the civilian regions of the north-west provinces. The semiotic significance of the various ‘Roman’ and ‘Celtic’ elements that had contributed to the creation of this type-fossil was probably now unimportant, as new generations of worshippers accepted Romano-Celtic religion for what it was, without dissecting out its contributory elements. Another regional religious characteristic was the re-emergence of the druids in the third and fourth centuries, now without political significance and in a role as philosophers and intellectuals (Clavel-Lévêque 1985, 593; Ausonius, *Comm. Prof. Burd.* 4 and 10). This is not a ‘Celtic renaissance’ as has been claimed, but more a manifestation of the regionalism seen in the later Empire (*cf.* King 1990, ch. 8). The Celtic side of Romano-Celtic religion continued to decline, as Roman names for deities start to predominate, and as the Celtic language in Gaul became less widespread, particularly amongst the literate classes (Guyonvarc’h and Le Roux-Guyonvarc’h 1986, 442ff.; Whatmough 1970, proleg., 68-76; Schmidt 1983, 1003-11).

The end of Romano-Celtic religion as a major cultural force came with its derogation as ‘paganism’ by early Christian writers, who did

not, of course, separate it from other non-Christian cults. It was regarded as an aspect of a conservative rural population resistant to religious change – in marked contrast to the role it had played only a few centuries earlier as a potent agent of the cultural transition from Celtic to Roman civilization in the north-west provinces.

Conclusion I: Romano-Celtic religion and the assessment of acculturation

This paper has attempted to bring out the cultural, rather than the purely religious significance of Romano-Celtic religion, on a diachronic basis and with a view to assessing the extent of Romanization of Celtic society. Religious monuments and artefacts are in many ways uniquely suited to this task, since they are a major symbolic focus of rituals that give cultural identity and cohesion to a society (Cohen 1985, 50 ff.). Because of this, there is considerable semiotic significance in the details of the physical remains. A 'Roman' feature such as the use of Corinthian capitals in a Romano-Celtic temple reflects the level of Romanization of the sanctuary, and the distribution of temples with a strong presence of such attributes could be taken as mapping the area where Roman acculturation of the Celtic provinces was greatest. Central and eastern Gaul and the Rhineland would in fact be the areas where this was so; regions to the west and north having a lesser degree of Romanization, and Britain markedly less.

Britain is also different from the continental provinces in having little evidence for the proto-Romano-Celtic stage of development seen at Gaulish sites such as Goumay or Nages. This is probably due to the lesser extent of 'pre-Roman Romanization' (Haselgrove 1984), following the precepts of the core-periphery model. The result is that there is a rapid transition from the tectonizing phase in the late pre-Roman Iron Age to the establishment of fully developed Romano-Celtic types, presumably inspired by Gallic examples, from the Flavian period. The distribution of the Romano-Celtic type was also limited to the lowland areas of Britain. Further north and west, the limited acculturation of local culture results in few, if any, civilian religious sites being known, probably because they were atectonic or ephemeral structures. It would be of the greatest interest to have a well-excavated example of an un-Romanized 'Celtic' sacred site from this region. Of course, temples dedicated to Celtic deities are known in a military context, for instance in the vicinity of Hadrian's Wall. These are Romanized structures, with Romanized ritual appurtenances, and

as such, form a distinctive 'military Romano-Celtic' style, quite separate from civilian Romano-Celtic ceremonial forms. The military variant is also found, to a lesser extent, in some of the military *vici* in Germany, and there is a case to be made for these types of temple being a facet of military culture following its own precepts and not drawing on local archetypes.

Another region on the margin of the main area of Romano-Celtic cults, southern Gaul, went by contrast in the direction of almost complete acculturation and absorption of Roman styles in religion (*pace* Lavagne 1970). Here, Romanization appears to have penetrated the final bastions of native culture, language and religious belief, to result in a culture almost wholly devoid of Celtic characteristics, to the extent that Pliny could refer to it as more like Italy than a province (*H.N.* 3, 32). The reasons for this are threefold, a) a relatively weak local culture, marginal to the Celtic core area further north, b) long exposure to Hellenization and Mediterranean civilisations generally, and c) a rapid and intense phase of Romanization in the first century BC, which saw the establishment of Roman cities, centuriation systems and of course, classical religion. The phase of Romanization was probably the most important factor, as it is clear that Hellenization resulted not in the ending of native culture but in a Gallo-Greek synthesis. Roman cultural intervention in southern Gaul may have been more deliberate and conscious policy than further north, due perhaps to the deep-seated prejudice of the *terror gallicus*, discussed by Drinkwater (1983, 7 ff). The results were similar in many ways to the intensive Romanization of the Po Valley, where Celtic culture was also weak and effectively extinguished by Rome.

Conclusion II: conservatism and change

A final remark brings us back to the realm of beliefs, a subject deliberately submerged by concentration on ceremonial form. Romanization clearly altered the latter, but it may be questioned how far the belief system itself changed. Conservatism of belief is often considered to be an essential facet of religion, following Malinowski's (1948, 67) conception of religion as a means of enduring situations of emotional stress, through the comfort of a traditional belief system. This is perhaps debatable, since recent commentators would lay more stress on the comfort of ritualistic behaviour than of the underlying belief system itself (Geertz 1966; Cohen 1985). As we have seen, ritualistic behaviour may have changed during the emergence of Romano-Celtic from Celtic religion, thus implying that religion was not being relied upon to provide traditional values during a crucial

period of transition, but on the contrary, was being used to promote that transition. The needs and desires of Celtic society, especially in Gaul, almost certainly favoured Romanization; and Romano-Celtic religion, far from inhibiting this trend, actually came to symbolize the new social developments. However, it would have been possible for these changes to have taken place without much alteration of the belief system, for, paradoxically, the Romanization of Celtic religion could have acted as a means of protecting the underlying religious beliefs. Instead of being marginalized or replaced by more classical forms of Roman religion, Celtic cults nearly everywhere survived and became acceptable by having a sufficiently flexible belief system to accommodate Romanized ceremonial forms. During the early Empire, at least, Romano-Celtic religion became culturally Roman while remaining ethnically Celtic.

Notes

1 For sites in Gaul and Germany see Home and King 1980, s.v. Alise-Sainte-Reine A & C, Allonnes, Ancy-et-Mâlain, Bem-Engehalbinsel A & B, Château-Porcien, Essarois A & B, Eu A, Faye- L'Abbesse, Genainville, Hochscheid, Koblenz A, Mayen-Adenau, Mont-Beuvray, Mouzon A, Offemont, Otrang, Poitiers, Ribemont-sur-Ancre (plus Cadoux 1984), Saint-Bonnet-de-Chirac, Saint-Germain-Sources-Seine, Saint-Léomer, Saint-Marcel (plus Fauduet 1986), Trier, Trougouzel, Vendevre. See also Villeneuve-au-Châtelot (Piette 1981), Digeon (Delplace *et al.* 1986), Mirebeau (Brunaux *et al.* 1985a), Baron-sur-Odon (Bertin 1977). For a recent catalogue of German sites see Follmann-Schulz 1986. For British sites see Drury 1980, plus Danebury (Cunliffe 1984), Hayling Island (King and Soffe 1990), Uley (Ellison forthcoming), Witham (Turner 1982).

2 Heathrow has been put forward as the earliest example of the Romano-Celtic temple type, dating as early as the 3rd century BC (Drury 1980, 52-4; Grimes 1948). In view of the evidence from the sites listed above and in the text, such a date is anomalous and seems unlikely. The dating apparently comes from the immediately adjacent settlement, not from the temple itself, from the area of which came the only sherd of Roman pottery from the site (from an overlying ditch). Therefore the temple could be of some other date than the settlement, and on the analogy of the other sites, is best placed in the late 1st century BC/early 1st century AD. It could be an early example of a religious site existing after the adjacent settlement has been abandoned, as happened at Maiden Castle (Drury 1980). For a recent discussion of the Heathrow site and its regional setting, see Cotton *et al.* 1986, 50-7.

Bibliography

- Benoit, F. 1981 *Entremont. Capitale celto-ligure des Salyens de Provence*, Gap: Ophrys
Bertin, D. 1977 'Le sanctuaire celto-romain du Mesnil de Baron-sur-Odon (Calvados)', *Gallia* 35, 75-88

- Black, E.W. 1986 'Romano-British burial customs and religious beliefs in south-east England', *Archaeol. J.* 143, 201-39
- Blagg, T.F.C. 1985 'Cult practice and its social context in the rural sanctuaries of Latium and southern Etruria', in, Malone, C. and Stoddart, S. (ed), *Papers in Italian Archaeology IV*, Oxford: British Archaeological Reports, 33-50
- Bogaers, J. 1955 *De Gallo-Romeinse Tempels te Elst in de Over-Betuwe*, s'Gravenhage: Staatsdrukkerijen Uitgeverijbedrijf
- Bowersock, G.W. 1986 'The mechanics of subversion in the Roman provinces', *Foundation Hardt Entreteins sur l'Antiquité Classique* 33, 291-320
- Bradley, R. 1984 *The Social Foundations of Prehistoric Britain*, Harlow: Longman
- Brisson, A. and Hatt, J.-J. 1955 'Cimitières gaulois et gallo-romains à enclos en Champagne', *Rev. Archéol. Est Centre-Est* 6, 313-33
- Brunaux, J.-L., Goguet, R., Guillaumet, J.-P., Meniel, P. and Rapin, A. 1985a 'Le sanctuaire celtique de Mirebeau (Côte-d'Or)', *Rev. Archéol. Est Centre-Est Supp.* 6, 79-111 (= *Les Ages du Fer dans la Vallée de la Saône*)
- Brunaux, J.-L., Meniel, P. and Poplin, F. 1985b *Gournay I: les fouilles sur le sanctuaire et l'oppidum (1975-1984)*, Amiens: Société des Antiquités Historiques de Picardie
- Cadoux, J.-L. 1984 'L'ossuaire gaulois de Ribemont-sur-Ancre (Somme). Premières observations, premières questions', *Gallia* 42, 53-78
- Carré, R. 1978 'Les cultes voconces', *Dialogues Hist. Anc.* 4, 119-33
- Chabot, L. 1983 'L'oppidum de la Cloche aux Pennes-Mirabeau (Bouches-du-Rhône)', *Rev. Archéol. Narbonnaise* 16, 39-80
- Chadwick, N. 1970 *The Celts*, Harmondsworth: Penguin
- Clavel-Lévêque, M. 1985 'Mais où sont les druides d'antan...? Tradition religieuse et identité culturelle en Gaule', *Dialogues Hist. Anc.* 11, 557-604
- Cohen, A.P. 1985 *The Symbolic Construction of Community*, Chichester: Ellis Horwood
- Collis, J. 1984 *The European Iron Age*, London: Batsford
- Colonna, G. (ed) 1985 *Santuari d'Etruria*, Milan: Electra
- Cotton, J., Mills, J. and Clegg, G. 1986 *Archaeology in West Middlesex*, Hillingdon: Hillingdon Borough Libraries
- Coupry, J. and Giffault, M. 1982 'La clientèle d'un sanctuaire d'Aristée aux Iles d'Hyères (Ier siècle avant J-C)', *La Parola del Passato* 37, 360-70
- Crummey, P. 1980 'The temples of Roman Colchester', in, Rodwell, W. (ed), *Temples, Churches and Religion: recent research in Roman Britain*, Oxford: British Archaeological Reports, 243-83
- Cunliffe, B.W. 1984a 'Iron Age Wessex: continuity and change', in, Cunliffe, B. and Miles, D. (ed), *Aspects of the Iron Age in Central Southern Britain*, Oxford University Committee for Archaeology, 12-45
- Cunliffe, B.W. 1984b *Danebury: an Iron Age hillfort in Hampshire*, London: Council for British Archaeology Research Report 52
- Cunliffe, B.W. 1986 'The sanctuary of Sulis Minerva at Bath: a brief review', in, Henig, M.E. and King, A.C. (ed), *Pagan Gods and Shrines of the Roman Empire*, Oxford: Oxford University Committee for Archaeology, 1-14
- Cunliffe, B.W. and Davenport, P. 1985 *The Temple of Sulis Minerva at Bath I, The Site*, Oxford: Oxford University Committee for Archaeology
- de Gérin-Ricard, H. 1927 *Le Sanctuaire préromain de Roquepertuse*, Marseille: Société de Statistique, d'Histoire et d'Archéologie de Marseille et de Provence
- de Lavergne, E., de Lavergne, S., Reix, R., Aucher, M.R. and Aucher M. 1982 'Résultats de 17 années de fouilles à Masamas (Saint-Léomer)', *Bull. Soc. Antiq.*

- De Laet, S.J. 1966 'Van grafmonument tot heiligdom', *Meded. Kon. Vlaamse Acad. Wetensch. Lett. Schone Kunst Belg., klasse Letteren* 28, 2, 17-73
- Delplace, C., Jobie, E, Meniel, P. and Rapin, A. 1986 'Le sanctuaire de Digeon', *Rev. Archéol. Picardie* 1986, 3/4, 83-117
- Desbat, A. 1981 'L'architecture de terre à Lyon à l'époque romaine', in, Walker, S. (ed), *Récentes Recherches en Archéologie gallo-romaine et paléochrétienne sur Lyon et sa Région*, Oxford: British Archaeological Reports, 55-81
- Deys, S. 1983 *Les Bois sculptés des Sources de la Seine*, Paris: CNRS
- Donley, L.W. 1982 'House power: Swahili space and symbolic markers', in, Hodder, I. (ed), *Symbolic and Structural Archaeology*, Cambridge University Press, 63-72
- Drinkwater, J.F. 1983 *Roman Gaul*, Beckenham: Croom Helm
- Drury, P. 1980 'Non-classical religious buildings in Iron Age and Roman Britain: a review', in, Rodwell, W. (ed), *Temples, Churches and Religion: recent research in Roman Britain*, Oxford: British Archaeological Reports, 45-78
- Ellison, A. forthcoming *Excavations at Uley, Gloucestershire*
- Espérandieu, E. 1910 *Recueil général des Bas-Reliefs, Statues et Bas-reliefs de la Gaule romaine*, III, Paris: Imprimerie Nationale
- Fauduet, I. 1986 'Cult and ritual practice at Argentomagus, Indre, France', in, Henig, M.E. and King, A.C. (ed), *Pagan Gods and Shrines of the Roman Empire*, Oxford: Oxford University Committee for Archaeology, 25-8
- Fishwick, D. 1972 'The temple of the Three Gauls', *J. Roman Stud.* 62, 46-52
- Fishwick, D. 1978 'The development of provincial ruler worship in the western Roman Empire', *Aufstieg und Niedergang der Römischen Welt* II, 16, 2, 1201-53
- Flouest, J.-L. and Stead, I. 1979 *Iron Age Cemeteries in Champagne: the third interim report*, London: British Museum
- Follmann-Schulz, A.-B. 1986 'Die römischen Tempelanlagen in der Provinz Germania Inferior', *Aufstieg und Niedergang der Römischen Welt* II, 18, 1, 672-793
- Geertz, c. 1966 'Religion as a cultural system', in, Banton, M. (ed), *Anthropological Approaches to the Study of Religion*, London: Tavistock Publications, 1-46. Reprinted in shortened form in, Bocock, R and Thompson, K. (ed), 1985, *Religion and Ideology*, Manchester University Press, 66-75
- Green, M. J. 1986 *The Gods of the Celts*, Gloucester: Alan Sutton
- Grimes, W.F. 1948 'A prehistoric temple at London airport', *Archaeology* 1, 74-8
- Guyonvarc'h, C.J. and Le Roux-Guyonvarc'h, F. 1986 'Remarques sur la religion gallo-romaine: rupture et continuité', *Aufstieg und Niedergang der Römischen Welt* II, 18, 1, 423-55
- Haselgrove, c. 1984 "'Romanization" before the conquest: Gaulish precedents and British consequences', in, Blagg, T.F.C. and King, A.C. (ed), *Military and Civilian in Roman Britain: cultural relationships in a frontier province*, Oxford: British Archaeological Reports, 5-63
- Henig, M. 1984 *Religion in Roman Britain*, London: Batsford
- Hodder, I 1982 *Symbols in Action*, Cambridge University Press
- Horne, P.D. 1986 'Roman or Celtic temples? A case study', in, Henig, M. and King, A.C. (ed), *Pagan Gods and Shrines of the Roman Empire*, Oxford: Oxford University Committee for Archaeology, 15-24
- Horne, P.D. and King, A.C. 1980 'Romano-Celtic temples in continental Europe: a gazetteer of those with known plans', in, Rodwell, W. (ed), *Temples, Churches and Religion: recent research in Roman Britain*, Oxford: British Archaeological

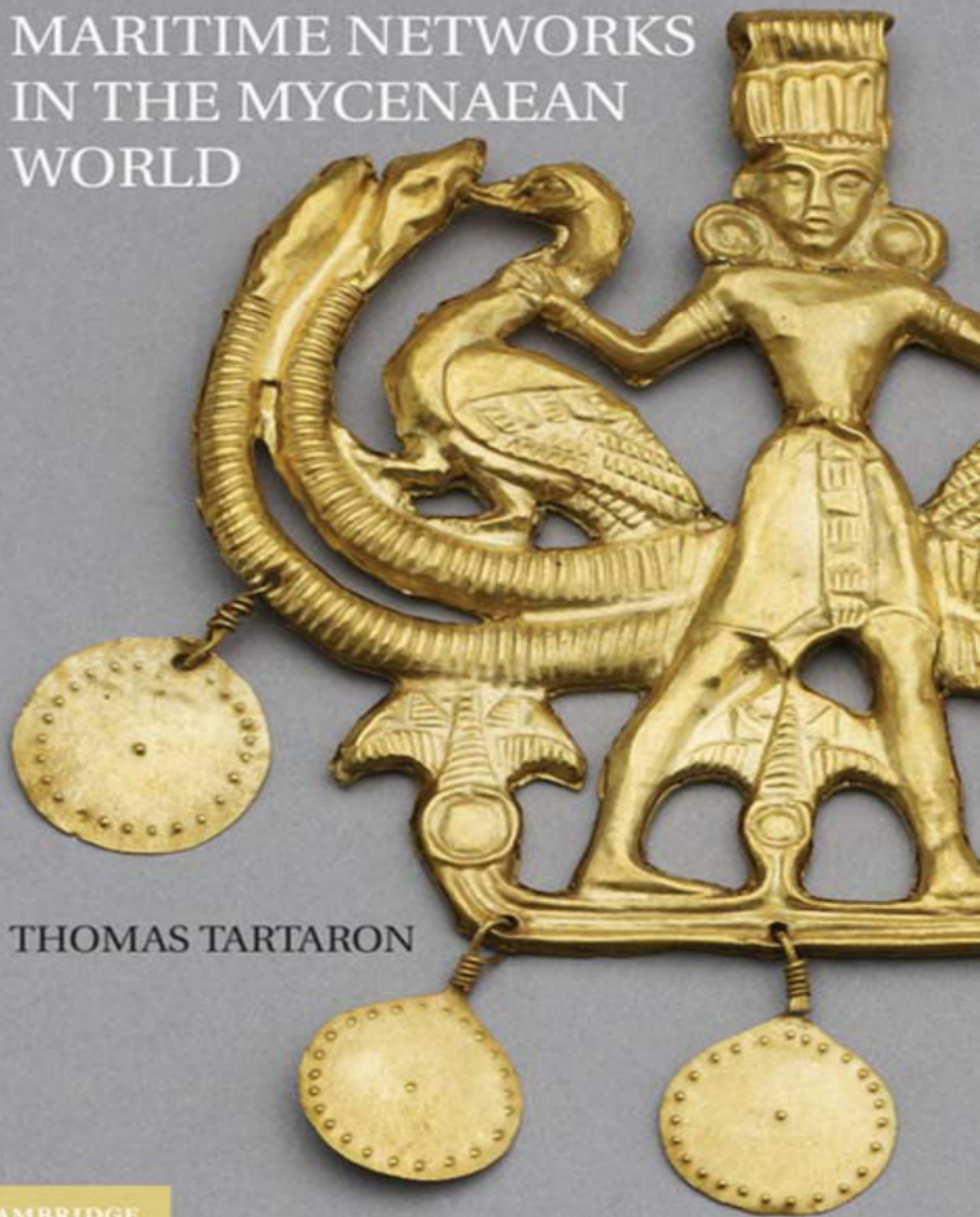
- King, A.C. 1990 *Roman Gaul and Germany*, London: British Museum Publications
- King, A.C. and Soffe, G. 1990 'Haying Island', in, Jones, R.F.J. (ed), *Britain in the Roman Period*, Sheffield: Department of Archaeology and Prehistory, forthcoming
- Lantier, R. 1943 'Les nouvelles statues d'Antremont', *Fondation Eugène Piot. Monuments et Mémoires* 40, 87-106
- Laur-Belart, R. 1978 *Führer durch Augusta Raurica*, Basel: Historischen u. Antiquarischen Gesellschaft zu Basel
- Lavagne, H. 1970 'Recherches sur l'interprétation romaine dans les cultes de la Narbonnaise', *Annu. Ecole Pratique Hautes Etudes, IVe Section* 102, 707-14
- Lejeune, M. 1985 *Recueil des Inscriptions Gauloises (RIG) I. Textes gallo-grecs*, Paris: CNRS
- Lewis, M J.T. 1966 *Temples in Roman Britain*, Cambridge University Press
- Malinowski, B. 1948 *Magic, Science and Religion*, Boston: Beacon Press
- Meates, G.W. 1979 *The Lullingstone Roman Villa, I, The Site*, Maidstone: Kent Archaeological Society
- Megaw, J.V.S. 1970 *Art of the European Iron Age: a study of the elusive image*, Bath: Adams and Dart
- Momigliano, A. 1986 'Some preliminary remarks on the "religious opposition" to the Roman Empire', *Fondation Hardt Entretiens sur l'Antiquité Classique* 33, 103-33
- Nash, D. 1978 'Territory and state formation in Central Gaul', in, Green, D. et al. (ed), *Social Organization and Settlement*, Oxford: British Archaeological Reports, 455-75
- North, J. 1976 'Conservatism and change in Roman religion', *Pap. Brit. School Rome* 44, 1-12
- Paris, R. 1960 'Un temple celtique et gallo-romaine en Forêt de Châtillon-sur-Seine (Côte-d'Or)', *Rev. Archéol. Est Centre-Est* 11, 164-75
- Piette, J. 1981 'Le fanum de la Villeneuve-au-Châtelot (Aube). Etat de recherches en 1979', *Mém. Soc. Archéol. Champenoise* 2, 367-75 (= *L'Age du Fer en France Septentrionale*)
- Piggott, S. 1974 *The Druids*, Harmondsworth: Penguin
- Piggott, S. 1978 'Nemeton, temenos, bothros: sanctuaries of the ancient celts', in, Accademia Nazionale dei Lincei (ed), *I Celti e la loro Cultura nell'Epoca pre-romana e romana nella Britannia*, Rome: Accademia Nazionale dei Lincei, 37-54
- Piton, D. and Dilly, G. 1985 'La fanum des "Chatelets" de Vendeuil-Caply (Oise)', *Rev. Archéol. Picardie* 1985, 1/2, 25-64
- Planck, D. 1986 'Die Viereckschanze von Fellbach-Schmidlen', in, Planck, D. et al. (ed), *Der Keltenfürst von Hochdorf: Methoden und Ergebnisse der Landesarchäologie* (exhib. cat.), Stuttgart: Landesdenkmalamt Baden-Württemberg, 340-53
- Price, S.R.F. 1984 *Rituals and Power. The Roman Imperial Cult in Asia Minor*, Cambridge University Press
- Py, M. 1978 *L'Oppidum des Castels à Nages (Gard)*, Paris: CNRS
- Raepsaet-Charlier, M.-T. 1975 'La datation des inscriptions latines dans les provinces occidentales de l'Empire romain d'après les formules "IN H(ONOREM) D(OMUS) D(IVINAE)" et "DEO, DEAE"', *Aufstieg und Niedergang der Römischen Welt* II, 3, 232-82
- Richard, C. 1988 'Du fanum gaulois au temple classique au vicus du Gué de Sciaux', *Archéologia* 231, 48-53
- Röder, J. 1948 'Der Goloring', *Bonner J.* 148, 81-132

- Rolland, H. 'Nouvelles fouilles du sanctuaire des Glaniques', *Riv. Stud. Liguri* 34, 7-34
- Romeuf, A.-M. 1986 'Ex-voto en bois de Chamalières (Puy-de-Dôme) et des Sources de la Seine. Essai de comparaison', *Gallia* 44, 65-89
- Ross, A. 1986 *The Pagan Celts*, London: Batsford
- Rybová, A. and Soudsky, B. 1962 *Libeniçe. Keltská Svatyne ve Strednich Cechách*, Prague: Československé Akademie Ved
- Schmidt, K.H. 1983 'Keltisch-lateinische Sprachkontakte im römischen Gallien der Kaiserzeit', *Aufstieg und Niedergang der Römischen Welt* II, 29, 2, 988-1018
- Schwarz, K. 1962 'Zum Stand der Ausgrabungen in der spätkeltischen Viereckschanze von Holzhausen', *Jahresber. Bayerischen Bodendenkmalpflege* 3, 22-77
- Slofstra, J. and Sandei' W. van der 1987 'Rurale cultusplaatsen uit de Romeinse tijd in het Maas-Demer-Scheldegebied', *Analecta Praehistorica Leidenensis* 20, 125-68
- Small, D.B. 1987 'Towards a competent structuralist archaeology: a contribution from historical studies', *J. Anthro. Archaeol.* 6, 105-21
- Stambaugh, J.E. 1978 'The functions of Roman temples', *Aufstieg und Niedergang der Römischen Welt* II, 16, 1, 554-608
- Strong, D.E. 1968 *The Early Etruscans*, London: Evans Bros
- Térouanne, P. 1960 'Dédicaces à Mars Mullo découvertes à Allonnes (Sarthe)', *Gallia* 18, 185-9
- Thevenot, E. 1968 *Divinités et Sanctuaires de la Gaule*, Paris: Fayard
- Turner, R. 1982 *Ivy Chimneys, Witham. An interim report*, Chelmsford: Essex County Council Archaeology Section
- Venclová, N. 1989 'Mšecké Žehrovice, Bohemia: excavations 1979-88', *Antiquity* 63, 142-6
- Vidal, M. 1973 'Vestiges d'un édifice du I^{er} siècle av. J-C à Vieille-Toulouse', *Pallas* 20, 105-13
- Vidal, M. 1987 'L'emporium de Vieille-Toulouse et les puits funéraires du Toulousain', in, *Toulouse et sa Région*, Dijon: Dossiers d'Histoire et d'Archéologie 120, 37-41
- Weber, G. 1981 'Neue Ausgrabungen am "Apollo-Grannus-Heiligtum" in Faimingen. Zwischenbericht', *Ber. Rom-Germ. Komm.* 62, 103-218
- Whatmough, J. 1970 *The Dialects of Ancient Gaul*, Cambridge, Mass.: Harvard University Press
- Wheeler, R.E.M. 1928 'A "Romano-Celtic" temple near Harlow, Essex, and a note on the type', *Antiq. J.* 8, 300-326
- Wightman, E.M. 1985 *Gallia Belgica*, London: Batsford
- Wightman, E.M. 1986 'Pagan cults in the province of Belgica', *Aufstieg und Niedergang der Römischen Welt* II, 18, 1, 542-89
- Wilson, D.R. 1980 'Romano-Celtic temple architecture: how much do we actually know?', in, Rodwell, W. (ed), *Temples, Churches and Religion: recent research in Roman Britain*, Oxford: British Archaeological Reports, 5-30
- Zecchini, G. 1984 *I Druidi e l'opposizione dei Celti a Roma*, Milan
- Zürm, H. 1964 'An anthropomorphic Hallstatt stele', *Antiquity* 38, 224-6

MARITIME NETWORKS IN THE MYCENAEAN WORLD

THOMAS TARTARON

CAMBRIDGE



Maritime Networks in the Mycenaean World

In this book, Thomas F. Tartaron presents a new and original reassessment of the maritime world of the Mycenaean Greeks of the Late Bronze Age. By all accounts a seafaring people, they enjoyed maritime connections with peoples as distant as Egypt and Sicily. These long-distance relationships have been celebrated and much studied; by contrast, the vibrant worlds of local maritime interaction and exploitation of the sea have been virtually ignored. Tartaron argues that local maritime networks, in the form of “coastscales” and “small worlds,” are far more representative of the true fabric of Mycenaean life. He offers a complete template of conceptual and methodological tools for recovering small worlds and the communities that inhabited them. Combining archaeological, geoarchaeological, and anthropological approaches with ancient texts and network theory, he demonstrates the application of this scheme in several case studies. This book presents new perspectives and challenges for all archaeologists with interests in maritime connectivity.

Thomas F. Tartaron is Associate Professor of Classical Studies at the University of Pennsylvania, where he is also Chair of the Art and Archaeology of the Mediterranean World Graduate Group and a Consulting Scholar in the Mediterranean Section of the University of Pennsylvania Museum of Archaeology and Anthropology. He has been a Colburn Fellow and Fulbright Fellow at the American School of Classical Studies at Athens. He has participated in numerous excavations and regional surveys in Greece, Iraq, Albania, and the United States. His current field project, the Saronic Harbors Archaeological Research Project, co-directed with Daniel J. Pullen, has exposed a unique Mycenaean harbor settlement that may have been one of Mycenae's main ports on the Aegean Sea. This work is supported by the National Science Foundation (USA) and a number of private foundations. Tartaron has published many articles on Greek prehistory and archaeological method and theory in edited volumes and in journals such as *Antiquity*, *Hesperia*, and the *Journal of Archaeological Research*. His previous book, *Bronze Age Landscape and*

Society in Southern Epirus, Greece (2004), was published in the British Archaeological Reports International Series.

Maritime Networks in the Mycenaean World

Thomas F. Tartaron
University of Pennsylvania



CAMBRIDGE
UNIVERSITY PRESS

CAMBRIDGE UNIVERSITY PRESS

Cambridge, New York, Melbourne, Madrid, Cape Town, Singapore,
São Paulo, Delhi, Mexico City

Cambridge University Press

32 Avenue of the Americas, New York, NY 10013-2473, USA

www.cambridge.org

Information on this title: www.cambridge.org/9781107002982

© Thomas F. Tartaron 2013

This publication is in copyright. Subject to statutory exception and to the provisions of relevant collective licensing agreements, no reproduction of any part may take place without the written permission of Cambridge University Press.

First published 2013

Printed in the United States of America

A catalog record for this publication is available from the British Library.

Library of Congress Cataloging in Publication Data

Tartaron, Thomas F.

Maritime networks in the Mycenaean world / Thomas Tartaron.

p. cm.

Includes bibliographical references and index.

ISBN 978-1-107-00298-2 (hbk.)

1. Navigation -- Greece -- History -- To 1500. 2. Coastal archaeology -- Greece -- Methodology. 3. Coast changes -- Greece -- History. 4. Civilization, Mycenaean. 5. Greece -- Commerce -- History, Ancient. 6. Aegean Sea -- Navigation -- History -- To 1500. I. Title.

VK16.T37 2014

387.50938'09013--dc23 2012042713

ISBN 978-1-107-00298-2 Hardback

Cambridge University Press has no responsibility for the persistence or accuracy of URLs for external or third-party Internet Web sites referred to in this publication and does not guarantee that any content on such Web sites is, or will remain, accurate or appropriate.

Dedicated to the memory of my father, Francis X. Tartaron, Jr.

Contents

Figures

Tables

Preface

Acknowledgments

1 The Problem of Mycenaean Coastal Worlds

2 Mycenaean and the Sea

3 Ships and Boats of the Aegean Bronze Age

4 The Maritime Environment of the Aegean Sea

5 Coasts and Harbors of the Bronze Age Aegean: Characteristics,
Discovery, and Reconstruction

6 Concepts for Mycenaean Coastal Worlds

7 Coastscapes and Small Worlds of the Aegean Bronze Age: Case
Studies

8 Conclusions and Prospects

Notes

References

Index

Figures

1.1 Map of the Mediterranean and Aegean with important Bronze Age sites indicated

2.1 View of the shaft graves of Grave Circle A, as it appeared at Mycenae

2.2 Aerial view of the citadel, Mycenae

2.3 Linear B social pyramid

2.4 Linear B tablet PY Tn 996

2.5 Colin Renfrew's (1975) modes of exchange

2.6 The Flotilla Fresco, West House Room 5, Akrotiri

2.7 "Flagship" from the Flotilla Fresco, Akrotiri

2.8 Clay boat model, Asine LH IIIC

3.1 Mortise-and-tenon joinery

3.2 Painted keel on boat model, Asine LH IIIC

3.3 Bird-head stempost decoration on a straight-sided alabastron

3.4 Steering oar on an Early Cycladic III sherd

3.5 Earliest Mediterranean depiction of a sailing vessel, on a Gerzean jar, Egypt

3.6 Steatite seal with a ship and possible steering oar

3.7 LH II signet ring showing awning structure, Tiryns

3.8 Ikria from Flotilla Fresco ships, Akrotiri

3.9 Ikrion frieze from West House Room 4, Akrotiri

3.10 MH II sherd showing armed figures aboard a ship, Kolonna

3.11 Fragment of the Silver Siege Rhyton, Mycenae

3.12 Kynos A galley with decked hull, LH IIIC Middle

3.13 Ship rowed from "Departure Town," Flotilla Fresco, Akrotiri

3.14 Ship under sail, Flotilla Fresco, Akrotiri

3.15 Incised image of a boat with human and animal, Korphi t'Aroniou, Naxos

3.16 Green steatite seal showing two men in a boat with fish swimming underneath, MM I, Malia (W808)

3.17 Fragmentary boat from an LH IIIC pictorial krater, Kynos

3.18 Sailing ship from an LH IIIC stirrup jar, Skyros

3.19 Corfiot reed boat (papyrella) at sea

4.1 Centers of cyclogenesis in the Mediterranean

4.2 Regional winds of the Mediterranean

4.3 Basic dynamics of land and sea breezes

4.4 Mediterranean currents and water circulation

4.5 General sea-surface circulation flow in the Aegean

4.6 Typical positions of major cyclonic and anticyclonic gyres in the Aegean

4.7 Distribution, size, and intensity plots of eddies in the Aegean

4.8 Satellite image of Kapsali Bay, Kythera

4.9 Visibility of land from the sea in the Mediterranean

4.10 Sun, sea spirals, and fish incised on an Early Cycladic frying pan, Louros Athalassou cemetery, Naxos

4.11 Hypothetical Aegean Bronze Age sea routes

4.12 Hypothetical long-distance sea routes in the eastern Mediterranean

4.13 Example of a star-structure compass, Caroline Islands, Micronesia

5.1 Classification of coasts by relative motion of the shoreline

5.2 Movement of sediments along Mediterranean coasts

5.3 View of the sequence of ridges and swales at the mouth of the Acheron River, Epirus

5.4 View of tombolo, Paximadi Cape, Euboea

5.5 View of an estuary in South Carolina, United States

5.6 Example of a lagoon and barrier system on coastal Elis

5.7 Formation of the Scamander plain, Troy

5.8 Reconstruction of ship sheds at Kommos

5.9 Hypothetical reconstruction of an artificial harbor at Pylos

5.10 Aerial photograph of submerged harbor remains near Naples

5.11 Plan of submerged remains at Caesarea Maritima

5.12 Correlation of biofacies and sedimentary facies in the Ancient Harbour Parasequence

5.13 Topographic typology of Bronze Age anchorages: high-energy coasts

5.14 Topographic typology of Bronze Age anchorages: low-energy coasts

5.15 Flow chart of methods in geoarchaeology and paleogeography

5.16 Location of Liman Tepe in the Bay of Izmir region

5.17 Reconstruction of the Bronze Age coastline at Liman Tepe

6.1 Map of a hypothetical Mycenaean maritime culture region

6.2 Broodbank's PPA versions 1–4, based on different initial and growth conditions

6.3 Maps of cost-weighted path distance for eastbound and westbound journeys in the eastern Mediterranean

7.1 Map of the Saronic Gulf region with important Bronze Age sites indicated

7.2 Comparative ranges of transportation modes in the Saronic Gulf region

7.3 Map showing the locations of corridor houses and fortifications

in the EB II Aegean

- 7.4 Site plan of Bronze Age Kolonna, Aigina
- 7.5 “Master of Animals” pendant from the Aigina Treasure
- 7.6 Objects from the Aigina MH II “shaft grave”
- 7.7 Distribution of Aiginetan “gold mica” pottery exports
- 7.8 Map of Aigina showing the locations of known MH sites
- 7.9 Map of early Mycenaean sites in the Saronic region
- 7.10 Map of late Mycenaean sites in the Saronic region
- 7.11 General plan of Mycenaean Kanakia, Salamis
- 7.12 Partial plan of excavated Mycenaean structures, Ayios Konstantinos, Methana
- 7.13 Digital terrain model of the Korphos region
- 7.14 Aerial photograph of the Kalamianos site
- 7.15 GIS plan of architecture and other features at Kalamianos
- 7.16 Example of large-rubble construction of Mycenaean buildings at Kalamianos
- 7.17 Reconstructed coastlines and harbor basins at Kalamianos
- 7.18 Ballast pile identified in inshore waters at Kalamianos
- 7.19 SHARP survey zones and survey units
- 7.20 Ancient architectural remains in the SHARP survey area
- 7.21 Satellite image with locations of stone cairns and enclosures
- 7.22 View and drawing of a small cairn on the Pharonisi peninsula
- 7.23 View of an EBA stone enclosure
- 7.24 View of Stiri and adjacent polje, with location of the Mycenaean site indicated
- 7.25 Differential GPS plan of Mycenaean architecture at Stiri
- 7.26 Plan of architectural features at the “saddle site” north of Kalamianos
- 7.27 Monumental Mycenaean agricultural terrace walls at Stiri
- 7.28 Map of the southeastern Aegean and southwestern Anatolian coast
- 7.29 Three-dimensional map of the Latmian Gulf at maximum marine transgression, circa 4000 BP
- 7.30 Map showing the topography of Bronze Age Miletos and vicinity
- 7.31 Mycenaean elements in the southeastern Aegean
- 7.32 Area map of Thessaly, with important Neolithic and Bronze Age sites indicated
- 7.33 Map of the changing coastline of the Bay of Volos
- 7.34 Architectural plan of LBA Dimini

Tables

- 1.1 Chronological framework for the Aegean Bronze Age
- 3.1 Variations in the calculation of dimensions of the Flotilla Fresco ships
- 3.2 Hypothetical LBA small boat types and functions
- 3.3 Range of fishing practices defined by setting
- 3.4 Bronze Age seacraft performance characteristics
- 4.1 Potential navigational aids to Bronze Age seafaring
- 5.1 Sedimentary facies in the lower Acheron valley
- 5.2 Mediterranean harbors associated with topographical types
- 6.1 Framework for Mycenaean maritime cultural landscapes
- 7.1 Chronological chart for Kolonna
- 7.2 Classes of EBA and LBA architectural remains in the Korphos region

Preface

This book is inspired by a keen interest in coastal archaeology, cultivated during twenty years of fieldwork in coastal regions of mainland Greece. Over this time, I have collected empirical data from three regional landscape archaeology projects with extensive coastal components: the Nikopolis Project (1991–95), the Eastern Korinthia Archaeological Survey (1998–2002), and the Saronic Harbors Archaeological Research Project (2007–11), which have allowed me to address Mycenaean coastal exploitation at multiple spatial and temporal scales. As I worked through these data and tried to arrive at a more comprehensive understanding of coastal life, I became increasingly aware of, and frustrated by, the gaps in our knowledge about coastal exploitation in the Mycenaean period and the selective treatment it has received in the scholarly literature. It seemed that local-scale maritime networks were only rarely discussed, and that the coastal communities that participated in them were largely ignored. The topic deserves more comprehensive, systematic treatment than it has received to date. This book constitutes my attempt to suggest a refocused and more holistic research agenda. The elements of this approach are both conceptual and methodological, but perhaps most importantly, they must be transferable to practice in the field, where only by generating robust empirical data can we begin to close this knowledge gap. Accordingly, I offer one detailed case study and two “sketches” to demonstrate the application of this approach and to suggest some directions for future research. I hope to make a helpful contribution to Aegean Bronze Age archaeology, but I also intend this work to be sufficiently general that archaeologists working on maritime and coastal problems in any world area might find it useful in their own investigations.

Acknowledgments

My love of coastal archaeology has been nurtured over two decades along the shores of Epirus and the Corinthia. I am grateful first to the directors of the Nikopolis Project (James Wiseman and Kostas Zachos) and the Eastern Corinthia Archaeological Survey (Timothy Gregory and Daniel Pullen) for allowing me to indulge my interests. I want especially to recognize Daniel Pullen, with whom I co-direct the Saronic Harbors Archaeological Research Project, who has been an extraordinary colleague and friend. The fundamental ideas about coastscapes and small worlds are ones we crafted together, and he has been unfailingly supportive of me during the gestation of this book and my concurrent progress toward academic tenure. Over the years, Heather Lechtman, Curtis Runnels, and Jeremy Rutter have been mentors whose intellectual influence on my work has been great. Cyprian Broodbank is a colleague whose work has had a tremendous impact on my thinking, as will be evident in the following pages. All of these collaborations have blossomed into long-term associations and friendships that I value deeply.

In the field, I have had the privilege of working together with a remarkable group of geoarchaeologists, including Mark Besonen, Joe Boyce, Rick Dunn, Zhichun Jing, Jay Noller, Rip Rapp, Ed Reinhardt, Richard Rothaus, Tjeerd van Andel, Lisa Wells, and Eberhard Zangger. My understanding of coastal geomorphology and paleocoastal reconstruction has been the direct result of their patient and benevolent teaching, and their broad-minded approach to the interaction of environment and culture. Because I constantly stress the importance of high-quality empirical data, I want also to thank all of the professionals, students, and volunteers – far too many to name here – who walked the fields, mapped the features, and collected the artifacts and other data that form the basis for the kind of study presented here.

No fieldwork can take place in Greece without the support of the

regional archaeological authorities. In all of the above-named projects, our teams were fortunate to have the assistance and backing of the relevant ephorates. For the Saronic Gulf case study presented in this book, Daniel Pullen and I enjoyed a fruitful and harmonious collaboration with Konstantinos Kissas, Panayiota Kasimi, and Vasilis Tasinos of the 37th Ephoreia of Prehistoric and Classical Antiquities; and Demetrios Athanasoulis of the 25th Ephorate of Byzantine Antiquities, both in Corinth. I want especially to recognize Panayiota Kasimi, herself an expert in Mycenaean archaeology, for her firm but always collegial oversight of our project. The kindness and support of the people of Korphos have also been unforgettable. We fell in love immediately with this beautiful fishing village and its people, who accepted us, helped us, told us their stories, and supported our efforts to uncover a lost piece of their cultural heritage.

The bulk of this book was written while I was on leave from the University of Pennsylvania in 2009–10, with the generous support of the Loeb Classical Library Foundation and the School of Arts and Sciences of the University of Pennsylvania. I thank my wonderful colleagues in the Department of Classical Studies, who gave advice and other forms of support as I toiled to bring this project to a successful conclusion.

For discussion, advice, offprints, and other information, I am grateful to Eleni Balomenou, Philip Betancourt, Giuliana Bianco, John Bintliff, Emma Blake, Joe Boyce, Hariclia Brecolaki, Michael Cosmopoulos, Jack Davis, Amy Dill, Eleni Drakaki, Michael Galaty, Walter Gauß, Tim Gregory, Nick Kardulias, Margaretha Kramer-Hajos, Lynne Kvapil, Joseph Maran, Jeremy McInerney, Guy Middleton, Nicoletta Momigliano, Sheila Murnaghan, Bill Parkinson, Jeremy Rutter, Vasf aholu, Philip Sapirstein, Kim Shelton, Malgosia Siennicka, Carol Stein, Sherry Stocker, Tatiana Theodoropoulou, Lita Tzortzopoulou-Gregory, Aleydis Van de Moortel, Sofia Voutsaki, Malcolm Wiener, and James Wright.

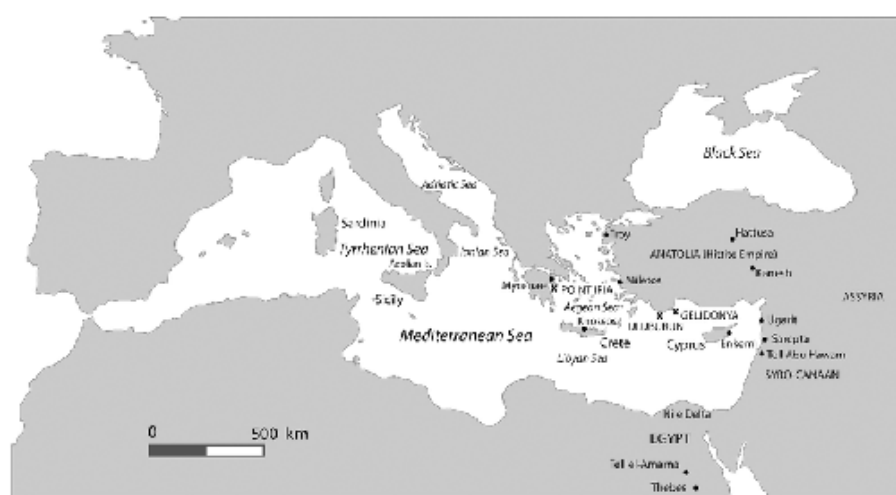
For kind permission to reproduce images or assistance in obtaining permissions, I am grateful to Tim Bekaert, Ira Block, Alexandra Christopoulou, David Davison, Stuart Dawrs, Sharon Day, Madeleine Donachie, Alice Essenpreis, Carol Hershenson, Jenni Hjohlman, Amalia Kakissis, Justin Leidwanger, Kevin McMahon, Dimitri Nakassis, Julie Nemer, Andrew Reinhard, Colin Renfrew, Mimi Ross, Jeremy Rutter, Maria Shaw, Steve Thomas, Theodor Troev, and Michael Wedde. For assistance in drafting several figures, I thank

Juliana Di Giustini and Felice Ford.

I owe a great debt to the professional and responsive staff at Cambridge University Press. Beatrice Rehl and her associates, Amanda Smith, Anastasia Graf, and Isabella Vitti, guided me through the complex process with skill and always expressed confidence in the final product. Peggy Rote at Aptara, Inc., was extraordinarily helpful and patient in the final stages of assembling the manuscript. Many thanks also to the anonymous readers: two who recommended the book for publication, and one who read the entire manuscript and gave a final positive assessment. Finally, I have two personal acknowledgments. My wife Juliana Di Giustini has given the love, support, and stability to my life that have allowed me to complete what at times seemed like an impossible task. Finally, this book is dedicated to the memory of my father, Francis X. Tartaron, Jr. Even as he wondered how I would ever make a living in this profession, he and my mother supported me unconditionally. I miss our weekly phone conversations, when he regaled me with all of the latest archaeological news he had culled from the newspapers and television. This book is dedicated with love to you, Dad.

One The Problem of Mycenaean Coastal Worlds

The archaeological, textual, and iconographic evidence for the Late Bronze Age (LBA) eastern Mediterranean indicates that the Mycenaeans of mainland Greece and the Aegean islands were a seafaring people and key participants in economic and political interactions with Egypt and the Near East, channeled through extensive maritime connections (Fig. 1.1; Table 1.1). The premise of this book is that despite an apparently rich record of engagement with the sea, and the keen interest scholars have shown in elucidating it, we remain surprisingly ignorant about many of its aspects. First, we know little about where Mycenaean anchorages and harbors were, or how they were used. Second, although much attention has been devoted to long-distance “international” connections with the states, empires, and emporia of the eastern Mediterranean, comparatively little consideration has been extended to networks of maritime relations operating at regional and (especially) local scales within the Mycenaean world. Third, we currently lack a systematic body of method and theory to allow us, on the one hand, to identify and reconstruct the coastal nodes and maritime routes that made up small- and medium-scale networks; and, on the other hand, to understand how they functioned within the broader social, political, and economic realities of their day.



(a)



(b)

1.1 (a) Map of the Mediterranean; (b) detail of the Aegean region, showing the main regions and sites mentioned in the text.

Table 1.1. Chronological framework for the Aegean Bronze Age

Crete (Minoan)			Mainland (Helladic)		
	Pottery phase	Calendar dates	Pottery phase	Calendar dates	
Prepalatial	Early Minoan (EM) I	3100–2700	Early Helladic (EH) I	3100–2700	
	EM II	2700–2200	EH II	2700–2200	
	EM III	2200–2100	EH III	2200–2000	
	Middle Minoan (MM) IA	2100–1900	Middle Helladic (MH) I	2000–1850	
Protopalatial	MM IB	1900–1800			
	MM II	1800–1700	MII II	1850–1700	
Neopalatial	MM III	1700–1600	MH III	1700–1600	Shaft Grave Era
	Late Minoan (LM) IA	1600–1480	Late Helladic (LH) I	1600–1500	
	LM IB	1480–1425			
Final Palatial	LM II	1425–1390	LH IIA	1500–1440	Mycenaean
			LH IIB	1440–1390	
	LM IIIA1	1390–1370	LH IIIA1	1390–1370	
Postpalatial	LM IIIA2	1370–1300	LH IIIA2	1370–1300	
	LM IIIB	1300–1190	LH IIIB	1300–1190	
	LM IIIC	1190–1070	LH IIIC	1190–1070	
	Subminoan	1070–1000	Submycenaean	1070–1015	

This work offers a close examination of these lacunae, with three specific aims: (1) to present a more balanced picture of maritime interactions, emphasizing that small- and medium-scale connections are more representative of the activities of most Mycenaean coastal communities than long-distance voyaging; (2) to present a set of concepts and methods for identifying and interpreting evidence for coastal exploitation and maritime interaction; and (3) by means of case studies, to illustrate the practical applications of these ideas and to advocate for new directions in research on Mycenaean “coastal worlds.”

An Archaeological and Historical Problem

At the outset, it will be useful to define some of the terms and concepts fundamental to this study to banish, as much as possible, ambiguity from the arguments and to reveal the assumptions that underlie them. As each section unfolds, further concepts will be defined in a similar way.

To begin with a basic question, what is the overlap, if any, in the terms *ship* and *boat*? In practice, for maritime historians and archaeologists the difference resides simply in size and complexity (McGrail 2006: 60), and there is no clear boundary or threshold in

these properties that marks the transition from one to the other. Alternative distinctions, such as open-seaworthiness or specific function, are no more than general rules of thumb that cannot be sustained if applied too rigorously. We know from countless ethnographic and historical examples in the South Pacific and elsewhere that small, simple vessels are used regularly for long, open-sea journeys, and similar boats made lengthy open-sea crossings as early as 40,000 years ago when the continent of Australia was first colonized. Therefore, while conceding the general pattern that small boats are used primarily for shorter-distance coast-hopping or navigation of rivers and inland waterways, larger ships may be used for those same purposes and small boats might venture on long journeys. Similarly, function must be demonstrated and not assumed, so associating a narrow set of functions with a particular hull type can be misleading or wrong. Care should be taken when using terms that embed function, such as *warship* or *trading vessel*, to allow for multifunctional or hybrid designs. In this study, the generic terms *vessel* and *craft*, which carry no implication of size, complexity, or function, will often be used in ambiguous cases or when a comment applies equally to ships and boats.

The coastal nodes of a Mycenaean maritime network might be characterized using such terms as *anchorage*, *harbor*, or *port*, which though sometimes used interchangeably, will have specific definitions for our analysis. An anchorage is any coastal location at which a vessel can be brought to a safe landing position, by any means including being pulled up onto a sandy shore, lying at anchor in shallow offshore waters, or being moored to a natural feature or an artificial construction such as a quay or jetty. There is no necessary implication in this term of the existence of durable, artificial constructions to accommodate vessels, or of a permanent settlement associated with these activities. Many anchorages, past and present, are used episodically, often tied seasonally to environmental conditions and agricultural calendars and providing temporary safe haven in times of danger at sea. The term *harbor* carries the stronger implication that certain coastal locations are earmarked for the role of accommodating maritime traffic. The morphological attributes of harbors range from entirely natural embayments with few or no artificial constructions to enhance their maritime functions, to fully artificial harbors fashioned by means of breakwaters, quays, and elaborate drainage and maintenance systems. Still, there is no requirement that a permanent settlement accompany a harbor, although the greater the maritime traffic or the number of artificial enhancements, the more likely that this will be the case. The

connotation of the term *port*, finally, is of the existence of a “port town,” thus a permanent settlement with a primary function as a major node in a maritime network. The port town typically possesses more than the bare essentials to accommodate maritime traffic: there may be complex facilities for storage, recording, and exchange of commodities; processing of raw materials; transshipment to interior regions or further seaward destinations; and quartering of crews for short- or longer-term residence. These three terms are hierarchical in the sense that ports by definition incorporate the properties of harbors and anchorages, whereas harbors are also anchorages. It is important to retain clear distinctions because this relationship may not work in the other direction: by these definitions, anchorages may not be harbors and harbors may not be ports. These distinctions will be useful for determining the roles and facilities that were or were not present in a given case.

The problem of locating the coastal nodes described by these terms arises from a set of interrelated factors that together engender low archaeological visibility. Unlike later commercial and military harbors of Greek and Roman times, evidence that the Mycenaeans built permanent harbor installations with features such as quays, breakwater structures, lighthouses, or even artificial harbors (Marriner and Morhange 2007) is decidedly lacking. It remains entirely possible that Mycenaean sailing ships, along with smaller boats powered by oars or paddles, were pulled onto sandy shores or anchored off the coast, as depicted in the somewhat earlier “Flotilla Fresco” in the West House at Akrotiri on the island of Thera (Morgan Brown 1978; Warren 1979), largely without the use of built harbor constructions that would leave archaeological traces.

An equally significant obstacle to identifying these locations is geomorphological change since the Bronze Age. Modern Aegean coastlines are poor indicators of their configuration in the Mycenaean era. Global sea-level rise affects the Aegean modestly, on the order of +3 to 5 meters since the Bronze Age (Lambeck 1995, 1996). Potentially more transformative are catastrophic tectonic events that cause coasts to lift up or subside. Greece lies in a zone of contact between two tectonic plates (the African and Eurasian) whose interaction shapes the Greek land mass and archipelago through deep fault systems, earthquakes, volcanism, and orogenesis. The consequences of tectonically induced uplift and subsidence can be notoriously localized; thus, there is no valid pan-Aegean model for the changes in form and *relative* sea level on a given segment of shoreline.

Another group of anchorages, including river mouths, deltas, and lagoons/estuaries, has disappeared through sedimentation caused naturally and often accelerated by human activities. In view of the complexities of coastal change, any comprehensive study of Aegean Bronze Age coastlines requires integrated programs of coastal geomorphology and archaeology, with both terrestrial and underwater components. Specifically, the archaeological methodology espoused here closely integrates methods of detection (remote sensing, Geographic Information Systems, archaeological and geoarchaeological surface survey) with subsequent investigation (terrestrial and underwater geology, extensive and intensive survey, terrestrial and underwater excavation, ethnography and oral history). As we shall see, the results of such analyses tend not to be broadly valid beyond the immediate settings under study.

There is also a lack of clarity, and a strong bias, concerning the scale and nature of Mycenaean maritime interaction. Scholarly interest tends to focus on long-distance voyaging, involving the exchange of elite goods and raw materials of vital interest to the palaces, such as copper and tin. The image of Mycenaean trading fleets sailing around the eastern Mediterranean, putting in at major ports, is alluring but surely misleading. We are not certain that Mycenaean ships routinely sailed to Egypt, for example, rather than obtaining Egyptian goods at emporia like Ugarit on the Syrian coast, or from ships visiting Greece from the east. More importantly, such long-distance connections were dwarfed in quantity by dense networks of local and regional maritime connections among Mycenaean communities. The latter routes and relationships have received little attention, but they must have dominated the use of anchorages, large and small, on Aegean coasts.

There were many shades of activity in the spectrum between local and international interaction. Local and microregional maritime networks are best expressed by the concept of the “small world” (Broodbank 2000: 175–210), composed of communities bound together by intensive, habitual interactions due to geography, traditional kinship ties, or other factors. There may be a high level of interdependence and communities may come to think of themselves as forming a natural entity, defined by the dense web of connections that supports a combination of political, social, and economic relationships. Small worlds are nested within larger regional and interregional economic and sometimes political networks. Small worlds evolve and change over time, as I seek to demonstrate in a diachronic reconstruction of a Bronze Age small world in the Saronic

Gulf ([Chapter 7](#)). The inhabitants of Kolonna on the island of Aigina dominated this small world of coastal settlements for nearly a millennium, until the expanding palace at Mycenae broke it apart, incorporating Saronic communities into broader Aegean networks. Within that millennium, however, it is possible to detect waxing and waning of the relationships of small coastal settlements with each other and with Aigina as the attention of Kolonna's inhabitants shifted into and away from the Gulf.

Moving beyond the local context, regional-scale networks within the Mycenaean world are typically measured by the distribution of imported artifacts. Often, it is possible to trace the movements of durable commodities through stylistic analysis (e.g., of painted pottery) or through archaeometric analyses that isolate physico-chemical “fingerprints” by which an artifact's place of origin can be identified. The connections thus recognized between centers and regions may be direct or indirect, and may involve the movement of goods and ideas without the implication of strong political ties or asymmetrical power relationships. For example, during the Mycenaean period the northern Corinthia exhibits clear affinities to the Argolid in material culture classes including architecture and pottery, but virtually all of the painted fineware that emulates Argive types was made locally (Morgan [1999](#): 349–61). In spite of a long scholarly tradition that Mycenae dominated the entire Corinthia politically, inspired in part by the Homeric catalogue of ships, there is little evidence to support this claim (Pullen and Tartaron [2007](#); Tartaron [2010](#)). Nevertheless, the growth of Mycenaean states did involve expansion into adjacent territories by economic, political, and, most likely, military means. This diachronic process has been fleshed out from excavation, survey, and mortuary data for the palatial centers at Pylos (Bennet [1999](#); Bennet and Shelmerdine [2001](#)) and Mycenae (Cherry and Davis [2001](#); Tartaron [2010](#); Voutsaki [1995](#), [1998](#), [1999](#); Wright [2004](#)).

Defining Mycenaean Coastal Worlds

A central concept of this book is the “Mycenaean coastal world.” The term *Mycenaean* itself is in need of deconstruction, since it is variously used to describe a chronological period (the Late Bronze Age or Late Helladic [LH] period, c. 1600–1050) occurring in a geographical area (the central and southern Greek mainland and some Aegean islands)

with fuzzy and shifting boundaries, a widespread style in material culture (architecture, iconography, pottery forms, etc.) that is said to achieve a kind of *koiné* in the high palatial period of LH IIIA2–early LH IIIB (roughly, 1370–1250), a complex sociopolitical system based on the palaces and recorded using a syllabic script (Linear B) that represents an archaic form of the Greek language, and sometimes even an ethnicity, a particularly problematic construct for a prehistoric world. Each of these senses of the term has provoked debate. Quite apart from the challenge of fixing chronometric dates based on radiocarbon determinations or synchronisms with Egyptian and other calendars, it is not altogether obvious when the Aegean became Mycenaean or when it ceased to be so. For instance, do we mark the end of the Mycenaean world with the collapse of the palaces circa 1200 BC, or do we recognize that Mycenaean people and their material culture traditions persisted for more than a century afterward, even experiencing a kind of revival in LH IIIC Middle (Thomatos 2006)? In fact, the picture is variable: sharp endings at some centers and in some regions; long twilights elsewhere.

A similar lack of sharp boundaries attends the geographical extent of the Mycenaean world, and here the issue is sometimes framed as a search for the “limits” or “boundaries” of the Mycenaean culture area, as manifest in attenuation of material or material culture traits (Kilian 1990). A good example is the attempt to define a series of zones and boundaries in Thessaly marking incremental cultural distance from the Mycenaean world (Feuer 1983, 1994). As coarse tools, these can be useful, though drawing boundaries can be a misleading exercise, for the obvious reason that the spatial pattern of participation in Mycenaean culture is far more complex than a set of map polygons within which uniform cultural engagement is implied (Galaty and Parkinson 2007: 8–9; Tartaron 2004: 165–67). Ongoing discoveries in the Bay of Volos area are pressing the question of whether coastal Thessaly was “Mycenaeanized” or fully Mycenaean (i.e., having no fundamental cultural differences from Mycenaean centers in the Argolid, for example), the latter having been claimed recently by Vasiliki Adrimi-Sismani (2007).

This discourse begs the question, of course, of whether there *can be* a list of material and cultural traits by which to include or exclude a settlement or region as Mycenaean, and what measure of “drift” from such a trait list is tolerable for inclusion. This approach assumes the existence of a “core area” comprising the Peloponnese and central Greece, which shared most aspects of material culture and practice:

pottery forms and decoration; domestic, military, sacred, and mortuary architecture; and common practices reflected in agropastoral economies, ritual practice, and burial customs. By implication, those living outside the core area were not Mycenaean, though some will have been “Mycenaeanized” by contact or colonization.

The point of view taken in this book is that while it is possible, and at times even useful, to identify a core area in which aspects of Mycenaean material culture and practice were broadly shared, such a zone was neither monolithic in cultural or geographic terms, nor static over time. If the standard is the material culture of the palaces, or that of a specific region such as the Argolid, then places “between and beyond” participated to varying degrees over time subject to local conditions such as accessibility and social organization (Tartaron 2010). The trouble with normative representations of the Mycenaean world based on trait lists and stylistic attributes is that they give a false impression of uniformity within the core area by suppressing the local and regional variability on which an illuminating and culturally rich narrative of interaction might be based. Those studying frontier areas in Thessaly or distant pockets of Mycenaean coastal presence elsewhere have challenged the sharp Mycenaean/non-Mycenaean cultural dichotomy, but just as important is the realization that a comparable dynamic of accommodation, resistance, and negotiation – to borrow the words of Andrew and Susan Sherratt (1998: 330), “an organic process of cultural encounter and dialectic” – was occurring in the heartland of the Peloponnese and central Greece.

The notion of “coastal worlds” is rendered in the plural to emphasize two closely related points. First, at any given coastal location, diachronic change is inevitable. With the passage of time, any coastal area may experience geomorphic or topographic change, foundations and destructions, reorientation of relationships and connections, and many other transformations. Therefore, Bronze Age coastal history is a complex narrative, not merely a series of fixed points on a map or a normative characterization that masks changes over centuries or millennia. Thus, for any coastal area that we study, we must deploy diverse perspectives and analytical tools and we must find a way to represent its dynamism.

Second, the term signals my alignment with certain postmodern ideas about landscape, particularly the notion that a multiplicity of culturally constructed landscapes constitutes the experiences of different sets of actors at any given place and time (Anscheutz et al.

2001; Ashmore and Knapp 1999). Properly conceived, this perspective does not ignore the realities of the physical world in which people live, or the role of environment in shaping human societies, but in an important way it allows us to address the varied perceptions, ideas, and cultural notions that allowed coastal dwellers to construct a comprehensible world. For instance, Mycenaean sailors had a need to compose a multifaceted maritime world of coastscapes, islandscapes, and seascapes in order to interact with the natural forces of sea and sky, and with the people and places they encountered en route – indeed, to survive. Apart from practical knowledge of ship technology, navigation, and environmental conditions such as currents and winds, ship captains needed to carry a mental map of landmarks, seamarks, and safe anchorages along a series of potential routes. This information was constituted in a symbolic world of named features, places, and meteorological forces; that is, a “habitus” (Bourdieu 1990) of maritime knowledge passed from one generation of seafarers to the next. In the characters and places of Homer's post-Bronze Age *Odyssey*, both realistic and fantastical, we may discern traces of a seafarer's phenomenology. At all times, the sea inspired ambivalence, with its paradoxical roles as giver of bounty (fish, exotic objects and ideas) and taker of lives.

These diverse theoretical strands come together in the concept of the “coastscape” (Pullen and Tartaron 2007), inspired by a postmodern interpretation of landscape and serving as the main analytical and interpretive lens for maritime coastal activity at the local scale. The coastscape takes its place among the constellation of specialized rubrics derived from landscape archaeology and applied to the maritime context, including “islandscapes” (Broodbank 2000: 168–76; Frieman 2008; Rainbird 2007) and “seascapes” (Cooney 2003). From the land-based perspective of a modern, urbanized world of paved roads and mechanized vehicles, coasts are often seen as peripheral, linear and narrow, and liminal or transitional. In a coastscape perspective, however, coasts have a certain centrality as meeting places between the sea and the interior. They are nodes of connectivity and integrative spaces, and as such they were historically privileged locations while at the same time exposed to dangers from both land and sea. This exposure contributed to complex historical sequences. In short, coastal spaces were hotspots in the Bronze Age that witnessed the interactions of everyday life, but also provided the setting for pivotal events and for the exchange of ideas that stimulated profound change. It is possible, therefore, to write an alternative narrative in which coastlines are central settings for economic and social history.

A final, yet crucial, point is that coastal worlds are not merely the linear feature of the coastline or the anchorages and settlements that might be found there. They also encompass offshore waters with their opportunities and dangers, the full visual field (i.e., viewshed) of a coastal location, the arteries connecting the coast to the interior and its resources and people, and the dense network of local maritime connections that constitute the coastal world. In the Mycenaean palatial period, a coastal settlement could access the productive capacity of the interior hinterland, while at the same time functioning as a node oriented primarily to the sea and the Mycenaean maritime economy.

Organization of the Book

The book consists of eight chapters. In [Chapter 2](#), “Mycenaeans and the Sea,” after a brief summary of the cultural and historical background of the Mycenaean period, I examine the geographical and chronological patterns of Mycenaean maritime activity in the Mediterranean, and then outline the relevant categories of evidence, with comments on each. [Chapter 3](#), “Ships and Boats of the Aegean Bronze Age,” outlines the salient features that are known or can be inferred about Bronze Age seacraft, using a range of physical, iconographic, textual, and ethnographic evidence. An attempt is made to trace the evolution of different hull types and to assess their performance characteristics, including the smaller boats that should have been the workhorses of local-scale maritime connectivity. In [Chapter 4](#), “The Maritime Environment of the Aegean Sea,” I analyze the full range of environmental phenomena, from global to local, that combined to generate the conditions of seafaring and coastal habitats. Further, I discuss the practices of navigation in the Aegean and the formation and perpetuation of maritime communities and their specialized knowledge. [Chapter 5](#), “Coasts and Harbors of the Bronze Age Aegean: Characteristics, Discovery, and Reconstruction,” outlines the environmental processes of coastal evolution over the last 6,000 years in the Mediterranean, and their impact on Aegean coastlines. I emphasize the need for programs of paleocoastal reconstruction at the local scale and present the elements of a rational field methodology for recovering Aegean Bronze Age anchorages. The aim of [Chapter 6](#), “Concepts for Mycenaean Coastal Worlds,” is to provide a theoretical framework for a multiscalar model of Mycenaean maritime interaction. This model consists of four distinct but nested maritime

interaction spheres: the coastscape, the small world, the regional/intracultural maritime interaction sphere, and the interregional/intercultural maritime interaction sphere. Social network analysis is advocated as a means to understand connectivity at these different scales. [Chapter 7](#), “Coastscares and Small Worlds of the Aegean Bronze Age: Case Studies,” puts these concepts and methods to work in one detailed (the Saronic Gulf) and two less detailed (Miletos/Latmian Gulf, Dimini/Bay of Volos) case studies. In each example, paleocoastal reconstruction was a key element in reconstituting the physical setting of coastscares that were embedded to varying degrees over time in small-world networks. Archaeological evidence is used to track the waxing and waning of these small worlds and to measure their participation in larger-scale connectivity. The concluding [Chapter 8](#) revisits the main themes – theoretical, methodological, and applied – and attempts to summarize my position on how Mycenaean coastal worlds can be both reconstituted and rethought.

The central goal of this book is to advocate for a reorientation of our intellectual energies away from international-scale maritime relations, toward the scale of the coastscape and the small world, not because there is no more to learn from *le grand trafic maritime*, but because a wealth of information about the preponderance of maritime lives and interactions remains largely untapped. Building on the work of many others before me (e.g., Braudel [1972](#); Broodbank [2000](#); Horden and Purcell [2000](#)), I recommend a set of conceptual and methodological tools with which to rationalize and systematize the task of drawing out this information. If we wish to achieve a holistic understanding of Mycenaean maritime activity, and particularly if we hope to offer Aegean Bronze Age data as cross-cultural comparative material (Parkinson [2010](#); Parkinson and Galaty [2009b](#): 11–22), we ought to build up from local-scale coastscares and networks – a “bottom-up” approach – so that interregional trade is not disembodied from its own social and cultural realities.

Two Mycenaeans and the Sea

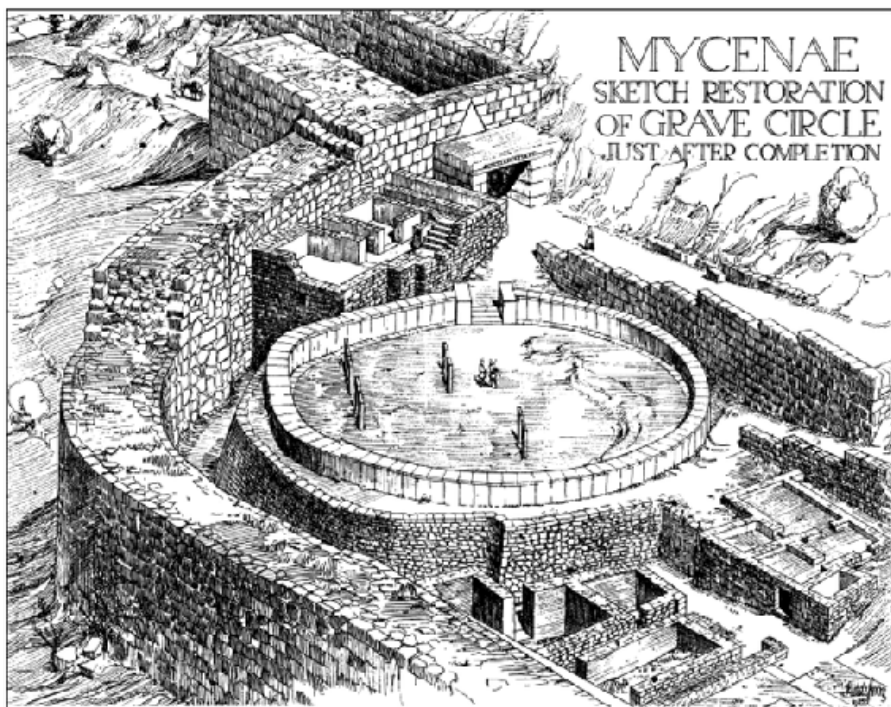
In this chapter, I establish the necessary evidentiary background for the study of Mycenaean maritime activity. I begin with a brief historical sketch of the Mycenaean period, charting the emergence, growth and prosperity, and decline and collapse of complex society on the Greek mainland. Next, I summarize the geographical and temporal variability of Mycenaean maritime activity in the Aegean and beyond, and comment on the nature of those interactions. Finally, I describe and evaluate the main sources of evidence for maritime activity that will be applied in subsequent chapters.

A Brief Historical Sketch of the Mycenaean Period

Emergence of Mycenaean Civilization

The first signs of the emergence of complex society on the Greek mainland during the Bronze Age occurred with the precocious appearance of wealth and social differentiation in the shaft graves at Mycenae (Fig. 2.1), roughly contemporary with the neopalatial Minoan palaces on Crete (see Fig. 1.1, Table 1.1). The richness and quantity of the imported goods buried with the dead are especially striking against the background of a materially poor Middle Bronze Age (MBA; Rutter 2001, pp. 124–47, 151–55). This conspicuous consumption and display of exotic wealth is seen as a deliberate strategy to proclaim status through access to distant lands and their luxury materials (Voutsaki 1995, 1998, 1999, 2001). Because the exotic objects and pictorial art of the shaft graves show close ties with Minoan Crete, at that time at the apex of its neopalatial prowess, it has often been suggested that small groups of nascent elites on the mainland cultivated a “special relationship” with one or more Minoan palaces to gain access to exotic materials and artisans. The Minoan influence is certainly real and even profound in some areas, including iconography, ceramic forms and styles, metalworking, and to some extent funerary architecture, but the graves and their furnishings betray many other sources and craft traditions, including Anatolian and Egyptian, but more prominently of local or other mainland origin. Still, Minoan expansion may have been the catalyst for this

transformation: the influx of Minoan and Cycladic goods disrupted the egalitarian social structures of Middle Helladic (MH) Greece with novel ideas and ways to distinguish oneself through the creation and expression of prestige (Voutsaki 1999, 2010). These new objects and styles were put to work as political capital through conspicuous ritual deposition in tombs. The execution of certain objects in distinct Minoan technique and style, but depicting mainland-oriented themes such as warfare and hunting, suggests the presence at Mycenae of Cretan artisans.



2.1 Artist's reconstruction of Grave Circle A, as it appeared at Mycenae circa 1210 BC. Drawing by Piet de Jong, *Annual of the British School at Athens* 25: plate XVIII. Reproduced with the permission of the British School at Athens.

Meanwhile, in Messenia in the southwestern Peloponnese, a competitive process was underway, marked by the occurrence of early tholos tombs at several sites. Regional-scale research has traced the diachronic histories of several small settlements, demonstrating their changing fortunes and functions over time, first within a competitive environment and later as part of a palace state centered at Pylos. Excavations and surface surveys have documented the growth of settlement at Pylos from the beginning of the Shaft Grave Era to the formation and expansion of the palace (Bennet 1999), along with an

apparent nucleation of population around the palace after 1400 as formerly active settlements in the hinterland diminished in importance (Bennet and Shelmerdine 2001).

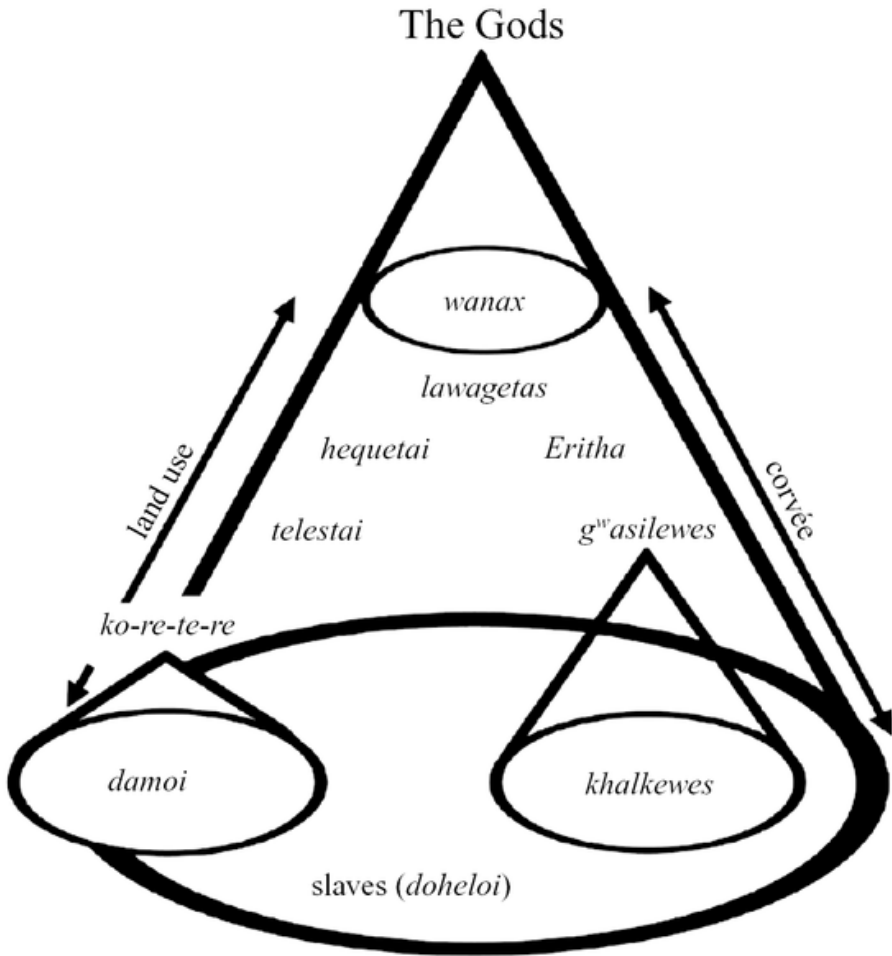


2.2 Aerial view of the citadel, Mycenae. Courtesy of Ira Block.

The Palatial Period

By 1400 (LH IIIA1 in pottery terms), a handful of palace-based states had emerged on the Greek mainland (Mycenae and Tiryns in the Argolid, Pylos in Messenia, Thebes in Boeotia, and perhaps at Athens, Orchomenos, and elsewhere), apparently because their political elite were able to eliminate rivals in a regional competition for hegemony (Bennet and Davis 1999; Fig. 2.2). These states controlled relatively extensive territories and developed strongly hierarchical political, social, and economic systems (Fig. 2.3), best understood at Pylos thanks to the discovery of an archive of more than 1,100 clay tablets inscribed in Linear B, a syllabic script that represents an archaic form of the Greek language (Chadwick 1994; Ventris and Chadwick 1973; Fig. 2.4). The earliest Linear B archive comes from the palace at Knossos during the period of Mycenaean occupation there. It consists of approximately 4,000 clay tablets from two horizons, the first dating to circa 1400 and the second to the mid-fourteenth century. Most of the remaining tablets are found at the mainland palaces, dating primarily to the destructions at the end of the thirteenth century. In addition to those 1,100 at Pylos, Thebes has yielded around 430, Mycenae 73, Tiryns 24, and Midea 3 (Bennet 2008: 181). Linear B

signs were also painted onto “inscribed” stirrup jars manufactured on Crete and distributed mainly to the palatial sites.



2.3 Linear B social pyramid. Courtesy of Dimitri Nakassis.



2.4 Linear B tablet PY Tn 996, recording bathtubs and vessels of gold and bronze. Courtesy of the Department of Classics, University of Cincinnati.

The archive at Pylos contains administrative records of materials entering and exiting the palace; allocations of raw materials to craft workers, of dependent workers and their rations to various projects and industries, and of food and drink for feasts; taxation and land records; conscription of personnel to man fleets; and other transactions (Shelmerdine and Bennet [2008](#)). There are no signs of literary, legal, historical, or liturgical content. The “top-down” perspective of the tablets has encouraged a tendency to portray the Mycenaean palaces as impersonal structures whose managerial control was “pervasive, monolithic and monopolistic” (Bennet [2001](#): 25), based partly on comparison with obsolete notions of an “Asiatic” palatial economy in the Near East (Cherry and Davis [1999](#): 94–95). Recently, scholars have reassessed the evidence and increasingly asserted the existence of palatial and nonpalatial sectors of the economy. In reality, these were not entirely separate, non-intersecting realms of activity, but in certain areas of agriculture and craft production the palaces may have shown little interest or exerted little control (Galaty [1999](#); Halstead [1992a](#), [1992b](#), [1999](#), [2001](#); Parkinson [1999](#)). Commodities produced from ubiquitous sources, such as pottery and marine products, may have circulated in independent, local markets (Hruby [2006](#); Knappett [2001](#); Palaima [1997](#); Whitelaw [2001a](#)).

The Mycenaean palaces prospered in the fourteenth and thirteenth centuries, corresponding to ceramic phases LH IIIA and LH IIIB. Settlement numbers rose and reached a second-millennium peak in this period. In the northeastern Peloponnese, settlements effectively doubled around the Saronic Gulf (Siennicka 2002: figs. 1, 2), and the palace state at Mycenae pursued an expansive policy by incorporating the Nemea Valley, the Berbati Valley, and the Saronic Gulf region in succession (Schallin 1996; Tartaron 2010; Wright 2004). Although Mycenae was the greatest palace center on the Greek mainland, its scale was modest when compared with contemporary Near Eastern cities (Hope Simpson 1981; Whitelaw 2001b), with a continuously settled area of more than 32 hectares and a population around 6,400, assuming a density of 200 people per hectare (Bennet 2008: 187; French 2002: 64). The extent to which Mycenae dominated the particularly complex political environment of the Argolid remains a matter of some debate: in addition to fortified citadels at Mycenae, Tiryns, and Midea, urban centers flourished at Argos, Lerna, Nauplion, and Asine (Kilian 1988). Although Mycenae was never equaled in wealth and complexity (Voutsaki 2010), so many substantial settlements may indicate political instability with the likelihood of shifting alliances and threats (Voutsaki 1998: 56, 2010: 102–104). The lack of systematic survey of the Argive Plain hampers finer-resolution information on the impact of the interactions among the major centers, as reflected at local scales. Tiryns is assumed to be the main harbor for the Argolid; paleocoastal reconstruction places the shore about one kilometer from Tiryns' walls in the Late Bronze Age (Zangger 1994a), though as elsewhere no physical traces of harbor facilities remain. In LH IIIB, strong similarities between Mycenae and Tiryns in the architecture of citadel and palace, along with comparable (but not identical) import records (Cline 1994: 89–90), suggest that they worked in concert and not as adversaries (Maran 2003).

In the fourteenth and thirteenth centuries, communication within the Mycenaean world flourished, giving rise to many commonalities in material culture and practice. This so-called *koiné* is best seen in fineware pottery styles of the LH IIIA and IIIB1 phases (gradually disintegrating in LH IIIB2), close similarities in Linear B scribal language, and a widespread Mycenaean religious ideology represented by ubiquitous anthropomorphic and zoomorphic figures and figurines. Yet the expansion and consolidation of Mycenaean culture was not a uniform phenomenon at any scale. A survey of Mycenaean influence in the different geographical regions adjacent to the Greek mainland, such as the Cycladic and Dodecanese islands, northern Greece, and the

northern Aegean islands, shows a variable penetration of Mycenaean culture that does not correlate with simple determinants such as distance or ease of access (Mee 2008: 365–81). For example, during the palatial period, Mycenaean influence in the Cyclades is seen largely in the transformation of pottery styles, while on Rhodes in the more distant Dodecanese islands, Mycenaean pottery, weapons, and jewelry were placed in Mycenaean-style chamber tombs starting in the later fifteenth century. Regional variability is also apparent in the core area, as attested by persistent regionalism in architecture (Darcque 2005) and pottery (Mommsen et al. 2002; Mountjoy 1990, 1999). Similarly, the organization of political and economic life in the Mycenaean heartland existed on a conceptual continuum from direct palatial control to independence from any center. The temporal and geographical expression of these variations was a patchwork in which rates of consolidation of outlying territories varied, and regional and microregional identities were often paramount in the absence of subordination to a palace state (Tartaron 2010).

Decline and Collapse

At the end of LH IIIB2, circa 1200–1190 BC, the Mycenaean palace states collapsed amidst destructions and abandonments at the palaces themselves as well as broadly across the Mycenaean world. The distinctive palatial buildings and fortifications, along with the organization and administration of the state as recorded in the Linear B archives, disappeared forever. There are two important caveats regarding the seemingly sudden and dramatic collapse, however: first, destructions and disruptions began considerably earlier at many sites, revealing a more protracted process of decline leading up to the final collapse; and second, material culture and ways of life that are recognizably Mycenaean did not vanish, but carried on through a tumultuous time of reconfiguration and change in the twelfth century, before finally fading out by Submycenaean times, circa 1075 BC.

At the end of LH IIIB1, circa 1250, localized destructions by fire occurred at Tiryns' citadel and in the elaborate houses (the Oil Merchant group, the Panayia houses) outside the citadel walls at Mycenae. In Boeotia, an initial destruction affected part of the palace at Thebes, and a more generalized devastation seems to have put the vast fortified site at Gla out of commission. Some of the damage may have been caused by earthquakes, but in many of these cases a violent destruction at human hands cannot be ruled out. There is incontrovertible evidence that in the decades that followed,

inhabitants of the palatial centers feared a protracted assault or siege. At Mycenae and Tiryns, the fortification walls were strengthened and expanded to encompass previously undefended portions of the lower slopes, and at Mycenae much of the workshop and storage activity that had been situated outside the walls was relocated inside. New fortification walls were also built at Midea and Athens. Most revealing of the dangerous environment was the construction at Mycenae, Tiryns, and Athens of subterranean passages inside the citadel leading to underground springs outside the walls. Pylos, by contrast, was unfortified in the palatial period, but warnings of impending danger have been read into a set of Linear B tablets recording the mobilization of 800 rowers, with the heading “Thus the watchers are guarding the coasts” (Chadwick 1994: 175). It is not certain whether this recruitment was an emergency measure or a routine annual conscription.

None of these security measures prevented the final destructions of the palaces or the collapse of the palatial system that accompanied them, by circa 1190 BC. Nonpalatial centers, both large and small, were also destroyed or abandoned. The twelfth century was one of considerable upheaval, a complex patchwork of migration, depopulation, and refugee settlement on the mainland (Middleton 2010: 71–92). Entire regions such as Messenia and Laconia were largely depopulated; estimates of the overall decrease in population in the Mycenaean heartland range as high as 75% for the period 1200–1000 (Tandy 1997: 20; but Dickinson 2006: 93–98 doubts this figure). Other settlements and regions became centers for resettlement of refugees. The mountains of Arcadia may have absorbed some of the population fleeing the troubles in Messenia, while at Tiryns the population actually swelled as the Upper and Lower Citadels were reoccupied and the Lower Town expanded, perhaps with refugees from destroyed or abandoned towns of the Argolid (Maran 2001). Much of the settlement within the walls of Mycenae was rebuilt and occupied at a diminished level throughout the twelfth century. Meanwhile, areas on the edges of the former Mycenaean world with good access to the sea prospered in the postpalatial period: the Ionian Islands, the coastal northwestern Peloponnese, the east coast of Attica, and certain of the Aegean islands flourished, perhaps energized by immigration. Some refugees migrated out of the Aegean entirely, finding their way particularly to Cyprus and the Levantine coast (Yasur-Landau 2010). Even on the devastated mainland, the chaotic early decades of the twelfth century gave way to a modicum of stability – a final “twilight” of the Aegean Bronze Age – in the second half of the twelfth century, corresponding to the ceramic phase

For more than a century, scholars have sought explanations for the rapid and permanent collapse of the palace states, giving rise to a range of hypotheses of varying plausibility (helpfully summarized in Deger-Jalkotzy 2008; Dickinson 2006: 41–57; Drews 1993; Middleton 2010; Schofield 2007: 174–82). Each focuses on a single cause or related set of causes deemed to have been a significant trigger setting into motion the process of collapse. Although a detailed examination of these hypotheses is beyond the scope of this historical summary, the main categories of explanation can be mentioned: (1) external invasions by “Dorian” descendants of Herakles in the generations after the Trojan War (Herodotus 1.56–57; Thucydides 1.12), or the marauding “Sea Peoples” mentioned in the Egyptian records of Merneptah and Ramesses III in the late thirteenth and twelfth centuries BC; (2) internal disturbances including internecine warfare among the palace states or social unrest within a palace state; (3) natural disasters such as droughts or earthquakes, whose effects were sufficiently widespread to precipitate a palatial collapse in a short period of time; and (4) inherent economic/political instability that caused the palaces to collapse of their own weight.

No single explanation has been found satisfactory to account for the wide-spread and roughly synchronous demise of the palaces. We will probably never know which factors caused the decline and fall of each of the palace states, but we can be sure that no single cause can account for the process. A multicausal approach recognizes that the Mycenaean kingdoms were not optimized for “sustainability,” as we would term it today, suffering from inherent organizational weaknesses, notably overspecialization and overcentralization, which made the state susceptible to internal and external threats. Earthquakes, droughts, diseases, and disruptions in trade may have exacerbated social stresses in a strongly hierarchical society, but the combination of factors will have been different in each case, and the cause and effect relationships among primary and secondary triggers will remain speculative. It is important to bear in mind that the collapse of complex society in the Aegean involved mainly the dismantling of an elite superstructure, leaving behind a considerably less complex agropastoral society that was still culturally Mycenaean.

Long-distance exchange in raw materials and exotic finished goods is central to the story of both prosperity and collapse. Mycenaean palatial elites relied on imports for the purposes of self-definition via

conspicuous consumption and display, and to ensure the loyalty of potentially adversarial factions among the aristocratic elements of society (Bennet 2008; Sherratt 2001). In the fourteenth and early thirteenth centuries, the Mycenaeans participated in an eastern Mediterranean world increasingly interconnected by maritime networks; as archaeological, archaeometric, and textual data show, goods flowed relatively efficiently, promoting general prosperity. There is some evidence, however, that in the second half of the thirteenth century, maritime trade routes to the palaces were disrupted, possibly a repercussion of the unstable political climate in the eastern Mediterranean. There is a marked reduction in the amount of Mycenaean pottery exported to the east in LH IIIB2, and imported material at Mycenaean sites seems to decrease at the same time, though the quantities of imports are too small for statistical validity or to form definitive patterns. At Pylos, several Linear B tablets detailing the careful rationing of bronze to as many as 400 smiths in the kingdom have been interpreted to reflect a shortage of metal circa 1200 (Chadwick 1994: 140–41). Such a shortage is possibly corroborated by the presence mainly of scrap metal in the Gelidonya shipwreck and absence of metal in the Point Iria wreck, both dated to around 1200, in contrast to the abundance of copper and tin in the Uluburun wreck a century earlier, but other explanations for this difference are possible (see below). Some of the trouble may have come at the hands of pirates and coastal raiders, the sort of seaborne marauders that later coalesced in Egyptian narratives as the Sea Peoples. It could also be the case that the Mycenaeans, always marginal actors in the east, were cut out of long-distance trade routes and rendered irrelevant as Near Eastern polities had more important concerns close to home (Sherratt 2001: 222–24, 237). A strong orientation to the sea survived the collapse, however: in the twelfth century, many prosperous settlements were situated near the coast and maritime trade was apparently just as important as it had been in the palatial period (Dickinson 2006: 69).

Mycenaean Long-Distance Maritime Activity

As outlined in [Chapter 1](#), research on Mycenaean maritime activity has focused almost exclusively on long-distance trade. The following discussion characterizes the variable patterns of long-distance maritime connections with different areas of the eastern and central Mediterranean over time, before moving to a consideration of the nature of this activity at scales from local to interregional.

The Geography and Chronology of Mycenaean Maritime Activity

As mentioned above, complex society on the Greek mainland emerged with much influence from Minoan Crete in the seventeenth to sixteenth centuries, corresponding to ceramic phases MH III–LH IIA. Minoan dominance of sea lanes in the Aegean and long-distance connections with the eastern Mediterranean would endure for some time afterward, until widespread destructions on Crete at the end of LM IB brought the neopalatial period to a close around the middle of the fifteenth century. Those destructions left Knossos the only functioning palace on Crete, apparently controlled by a Mycenaean elite who recorded in Linear B the administration of the palace and a broad swath of western to east-central Crete. The Mycenaean presence at Knossos was accompanied by the introduction across Crete of mainland styles of pottery, fresco iconography, and burial practice. The influx of people and material culture from the mainland may have been the result of an invasion that caused the destructions around the island; alternatively a group of Mycenaean may have exploited an internal crisis to seize control.

On the mainland, the later fifteenth century was still a time of competition and consolidation of regional political hegemony, in advance of the establishment of territorial palace states in the early fourteenth century (LH IIIA1). The mainland polities were not particularly active in maritime ventures in the Aegean or eastern Mediterranean in LH I–II (Mee 2008: 381), most likely because of Minoan control of sea routes. Starting in LH IIIA, the Mycenaean broadened their overseas contacts into the Aegean and beyond, superseding Cretan interests and inheriting Minoan maritime trade routes to the east. At Miletos on the coast of Asia Minor, a Minoan colony (Miletos IV) was replaced by a Mycenaean colony (Miletos V) encompassing ceramic phases LH IIIA1–IIIA2, roughly 100 years between the late fifteenth and fourteenth centuries, before suffering a major destruction. Mycenaean Miletos is surely to be identified with *Millawanda*, the coastal base of the *Ahiyawa* in the Hittite texts (Niemeier 2003: 103–105).

In general, Mycenaean objects (mainly painted pottery) begin to appear in quantity in the Aegean, Cyprus, the Levant, and Egypt by LH IIIA1 or LH IIIA2. In LH IIIA and early LH IIIB, most of these Mycenaean vessels were exported from the Greek mainland; a good percentage can be traced to production centers in the Argolid by

chemical characterization of their fabrics (Mommensen et al. 2002; Zuckerman et al. 2010). Subsequently, there is a shift in LH IIIB2–IIIC toward local production of Mycenaean-style pottery, and where a Greek provenience can be established, a greater diversity of production centers is indicated. Interestingly, imports to the Aegean from the Near East and Egypt are still heavily biased toward Crete, particularly Kommos and Knossos, in LH/LM IIIA (Cline 1994: 92, 2007). This may be a good illustration of the tenacity of economic relations in spite of political changes and other disruptions (Horden and Purcell 2000: 343–44). A long series of coarse to medium-coarse transport stirrup jars was produced on Crete from the fifteenth to twelfth centuries and used from Sardinia in the west to Egypt and the Levant in the east, including at Mycenaean palace centers in the Argolid and Boeotia (Ben-Shlomo et al. 2011; Haskell et al. 2011; Maran 2005). In LH IIIB, most imports to the Aegean found their way to the mainland, primarily to a few palatial centers (Mycenae, Tiryns, and Thebes).

An entirely different picture emerges for Mycenaean activity in the central Mediterranean (Blake 2008; Mee 2008: 379–81). Already in LH I Mycenaean pottery appears in southern Italy, Sicily, and the Aeolian islands. In these areas Minoan influence is minimal, and the Mycenaean presence may reflect a freedom to search for alternative sources of raw materials, probably metals. During LH IIIA these contacts expanded; many more sites in Italy have Mycenaean pottery. By LH IIIB, however, contacts diminished sharply with Sicily and the Aeolian islands, while relations with Sardinia and southern Italy strengthened. In the central Mediterranean, Mycenaean pottery was exclusively imported in LH I–IIIA, but in LH IIIB local imitations became increasingly common and by LH IIIC they were predominant. Italian imports in the Aegean are rare, with one exception: at Kommos, which through LH IIIA had been a major importer of goods from the east, objects from the central Mediterranean began to arrive in LH IIIA and by LH IIIB dominated the foreign assemblage (Cline 1994: 90, table 58). Kommos is the closest thing we know of to an international emporion in the Aegean (Rutter 1999; Shaw 2004).

In the postpalatial world of the twelfth century, maritime interaction continued and even prospered, but with significant changes in scale and content (Dickinson 2006: 197–205). The well-organized and regulated system of diplomatic and commercial exchanges in the Near East disappeared, and this had consequences for the Aegean as well. The large, standardized cargoes of metal ingots

and goods shipped in large transport containers, referred to in Near Eastern and Egyptian texts and demonstrated so spectacularly in the Uluburun shipwreck, no longer made their way to the Aegean. Very few transport stirrup jars or Mycenaean fineware vessels left the Aegean. Yet Near Eastern ships continued to voyage west in search of metals. Along the way, they stopped on Attica's eastern coast at Perati, where the community probably controlled the silver mines at Lavrion. Further north, Lefkandi and Mitrou may have been stops on the route to metal sources on the Chalkidiki peninsula. Elsewhere, good harbors on Crete and the Greek mainland offered stopping points en route to the metal sources of Sardinia and Italy.

On the whole, maritime connections were as important in LH IIIC as in the palatial period, particularly with potentially dangerous conditions in the interior, but the scope of the exchanges was modified. Some exotic goods from distant places still reached the coastal settlements of the Aegean, but these were mostly small items that we might be tempted to characterize as trinkets. In the LH IIIC Middle chamber tomb cemetery at Perati, the grave goods include Egyptian, Syrian, Mesopotamian, and Cypriot seals, scarabs, amulets, and beads (Thomatos 2006). The scarcity of Aegean-made transport stirrup jars and other fineware vessels outside the Aegean suggests that perfumed oils, wine, and probably textiles were no longer manufactured for export. There is a perceived shift toward regional and local exchange networks in a less regulated and more opportunistic environment. Vigorous trade continued within the Aegean orbit, as attested by the movement of pottery and the mutual influences of local styles. Regions such as the Euboean Gulf preserved their strong maritime orientation and took on distinct identities characteristic of maritime small worlds (Crielaard 2006). But the interregional contacts that did survive were of great importance, particularly for the introduction of new metal styles and technologies. The technology of ironworking seems to have been developed on Cyprus and was learned there by Greek immigrants in the postpalatial period (Iacovou 2006, 2008a, 2008b; Pickles and Peltenburg 1998), and recently introduced metal artifact types arrived from northern Italy, including long pins, fibulae, Naue Type II swords, daggers, and "flame"-shaped spearheads (Dickinson 2006: 204). Cyprus seems to have been of capital importance in this era, pursuing an independent agenda with active ties in the Levant, in the central Mediterranean with Sardinia, and on the Greek mainland with Euboea, Attica, and Tiryns (Maran 2004). The notion of a sharp swing from maritime exchange dominated by interregional networks to a narrowed focus on local and intra-Aegean relations is misleading, for two reasons. First,

ongoing discoveries have shown that long-distance ties were not cut as completely as once thought. Second, as argued in [Chapter 1](#), local- and regional-scale networks must always have dominated the total picture of maritime interactions. The thriving interregional relations of the fourteenth and thirteenth centuries were more the product of exceptional circumstances; being so extraordinary, they draw attention away from other scales of interaction.

The Frequency and Volume of Interregional Trade

There are different ways of interpreting the thousands of Aegean Bronze Age objects, predominantly pottery, which have been recovered around the eastern and central Mediterranean (Cline [1994](#); Lambrou-Phillipson [1990](#); Leonard [1994](#); van Wijngaarden [2002](#)). Looking at the same evidence, one person can find the wide contacts and varied contexts impressive and view the pottery as the tip of an iceberg of perishable items such as textiles and foodstuffs that must have moved along with the durable ceramics. A second person would emphasize the very small quantities that are attested from the perspective of time and space, perhaps even running a simple quantitative analysis to determine that the corpus amounts to 0.5 objects imported to the Aegean from the eastern Mediterranean per year over six centuries (Cherry [2009](#): 111–12), or using a more sophisticated approach, fewer than ten contacts per decade (Parkinson [2010](#): 16–25). As always, the truth must lie somewhere in the middle, but it is difficult to know where in the absence of so much key evidence.

The Linear B tablets are of little help. They contain rare allusions to the palaces' external relations, but none explicitly mentions merchants or long-distance maritime exchange. Exchanges of some kind are implicit in the recording of certain exotic commodities like sesame and ivory, and slave women hailing from the coast of Asia Minor who may have arrived at Pylos as war booty (summarized by Cline [2007](#): 198–99). We also learn from the Pylian tablets that the palace built and manned ships in the service of the state (Palaima [1991](#)). A few instances of regional interaction are recorded: a tablet at Mycenae mentions a transaction with Thebes (Cline [1994](#): 128–31; Killen [1985](#): 268; Chadwick [1994](#): 80–81), and another at Thebes documents exchanges with towns on Euboea (Aravantinos et al. [2001](#)).

From one perspective, the implication that one might infer from the Linear B archives that interregional exchange was an insignificant sector of the Mycenaean economy does not square well with the emerging archaeological record from around the Mediterranean. Durable Mycenaean imports, chiefly fine pottery and bronze weapons and implements, continue to be found in modest amounts in the eastern and central Mediterranean; under these circumstances, it is puzzling that so few “Orientalia” and “Occidentalia” are turning up in Aegean contexts (Cline [2009](#): 167–68).

The apparent contradiction between the textual and archaeological evidence has engendered a divergence of opinion regarding the scale of Late Bronze Age trade in the Mediterranean, with opposing camps that may be labeled “minimalist” and “maximalist.” (For an analysis of the roots of this debate in economic anthropology, see Tartaron [2001a](#).) Among the minimalists, Anthony Snodgrass is most prominent in denying a significant role for commercial trade in the Bronze Age economy, maintaining that a redistributive center would only send its ships abroad “...when it needs resources from overseas, and this may be very infrequently” (Snodgrass [1991](#): 18). For the minimalists, the archaeological record is meager evidence (Manning and Hulin [2005](#)), best explained in terms of infrequent, directional elite gift exchange that has nothing to do with money, markets, or private enterprise. Independent merchants have little place in this tightly regulated maritime economy (Chadwick [1994](#): 156–58).

The maximalist school tends to view Bronze Age trade as extensive, driven by market forces, and involving a substantial contribution from private merchants. Eric Cline ([2009](#): 163–64) has recently restated his position on trade between the Aegean and eastern Mediterranean: (1) Trade was mainly directional to the major palace centers of the Aegean, with secondary redistribution from those centers; (2) Trade was predominantly commercial, with some gift exchanges occurring at the diplomatic level; (3) The primary traded goods were wines, perfumes, oils, and metals; (4) Crete was the main recipient of imported goods from the eastern Mediterranean in the seventeenth to fourteenth centuries (LH/LM I–IIIA); (5) The Greek mainland was the main recipient of imported goods from the eastern Mediterranean in the thirteenth to mid-eleventh centuries (LH/LM IIIB–IIIC); (6) Crete interacted mainly with the East in LH/LM I–IIIA, and primarily with the West in LH/LM IIIB–IIIC; (7) The Greek mainland interacted with the West, and to a lesser extent, the East in LH/LM I–IIIA, and with the East in LH/LM IIIB–IIIC; (8) Egypt monopolized trade with the

Aegean during LH/LM I-II, and shared the Aegean trade with Syro-Palestine, Cyprus, and Italy during LH/LM IIIA-IIIIC. Cline (1994: 106, 2009: 164) has also reiterated his opinion that the scale of trade encompassing Egypt, the Near East, Italy, and the Aegean in the Late Bronze Age rivals that of today in economic complexity and political motivation. Sherratt and Sherratt (1991: 376) concur that the Bronze Age economy was a market economy in the formal sense.

The evidence of shipwrecks points unmistakably to a large, but archaeologically invisible, trade in raw materials and organic substances that do not normally survive in the archaeological record (Bass 1997). The Bronze Age shipwrecks excavated by George Bass and Cemal Pulak on Turkey's southern coast at Cape Gelidonya and Uluburun (see below for details) provide a glimpse of the breadth and cosmopolitan origin of material being transported around the Mediterranean (Bass 1991, 2005b; Pulak 1997, 1998, 2005). The main cargo of the Uluburun wreck comprised 10 tons of copper ingots, 1 ton of tin ingots, 175 glass ingots, a ton of terebinth resin stored in 130 of 145 Canaanite jars, and large amounts of varied Cypriot pottery. Also included were rare and exotic materials such as ebony logs, raw hippopotamus and elephant ivory, finished ivory objects, ostrich eggshells, seals, an Egyptian scarab bearing the name of Nefertiti, and vessels of faience, gold, and tin. A few swords and utilitarian objects such as knives, razors, chisels, oil lamps, and fishing equipment belonged to the crew. Numerous sets of pan-balance weights in the Near Eastern standard attest to the presence of a Semitic (not Aegean) merchant or merchants among the crew. Thanks to careful recovery methods and subsequent analyses, specialists were able to identify a range of organic remains including grains, nuts, spices, olives, figs, and pomegranates, as well as various branches and rushes used as dunnage in packing the main cargo (Knapp 1991; Haldane 1993). A dozen cultural groups – Canaanite, Egyptian, Cypriot, Mycenaean, Assyrian, Baby-lonian, Kassite, Nubian, Baltic, Balkan, eastern Near East, and possibly Sicilian – are represented in the raw and finished materials (Pulak 1997: 256). With the exception of the pottery, most of the material from the Uluburun wreck would rarely survive in a terrestrial archaeological context: the organic material would have long since disappeared, and most ingots would have been melted down or otherwise rendered unrecognizable in antiquity. The remains preserved on the Uluburun wreck permit us to imagine the range of goods conveyed around the eastern Mediterranean at the time of the Mycenaean palaces.

The excavator suggests that the Uluburun ship originated in a Syro-Canaanite port, and was bound westward toward the Aegean with a probable final destination at one of the Mycenaean palaces, "...an official dispatch of an enormously rich and valuable cargo of raw materials and manufactured goods largely intended for a specific destination" (Pulak 1998: 220). As such, it is perhaps not a "microcosm" of international trade in the fourteenth and thirteenth centuries, as has been claimed (Cline 1994: 100; criticized by Burns 2010: 15), but it could be used to buttress Snodgrass' vision of rare, directional gift exchange. Further support might be drawn from Pulak's (1998: 218) interpretation of some of the personal effects as belonging to two Mycenaean Greeks on board, whom he construes as emissaries accompanying the rich cargo to its final destination in the Aegean (see also Bachhuber 2003: 134–46).

The Gelidonya shipwreck represents a different, less elite form of maritime traffic, however. It contained mainly metal ingots along with scrap metal and metalworking tools, and is interpreted by the excavator as a private Levantine merchant vessel with a metal tinker on board, engaged in tramping from port to port (*cabotage*) in search of opportunities to buy, sell, fabricate, and repair metals (Bass 1991: 75). A third LBA shipwreck, which went down at Point Iria in the Argolic Gulf, is highly ambiguous because the small cargo consists only of a mix of Cypriot, Cretan, and Greek mainland pottery (Phelps et al. 1999). The ship may have originated in any of those places, and it may have been plying local networks rather than long-distance routes (see discussion of shipwrecks below). It is also crucial to consider that textual and archaeological evidence from the Bronze Age eastern Mediterranean demonstrates the conflation of private (entrepreneurial) and state-sponsored (palatial) merchant activity (Bachhuber 2006: 355; Knapp 1993; Manning and Hulin 2005: 273; Wiener 1987: 264). Even if the primary function of the Uluburun ship was to implement directional trade from one royal court to another, the diversity of the cargo and the presence of many balance weight sets suggest merchants conducting trade for profit at ports of call at Ugarit and on Cyprus.

A compromise between the minimalist and maximalist positions presents itself in the realization of multipurpose voyages and mixed cargoes, and when the volume of trade is distinguished from its significance. Sherratt and Sherratt (1991: 354) suggest that although the quantities of goods transported over long distances were small relative to total production, their importance should not be

underestimated, for they represent the efforts of a minority to acquire goods possessing tremendous social significance. A good case can be made that imported goods arriving in the Aegean from the eastern Mediterranean were imbued with a kind of symbolic power derived from the distances traveled and their mysterious cultural origins (Broodbank 1993; Helms 1988; Knapp 1997). To those who possessed them and controlled their distribution, they imparted esoteric knowledge and prestige, which could be manipulated to legitimize and maintain real social and political power. Bryan Burns (2010) rightly emphasizes that the true significance of imported goods lies not in their source or any meaning they held in their originating culture, but rather in how they were assimilated into indigenous frameworks of meaning in the destination contexts, and hoarded, displayed, or dispatched to enhance status and influence social action. The seemingly narrow distribution of imports in the Aegean may be the result of a deliberate strategy on the part of elites to control quantities as well as content, because exotic objects lose their power when they are widely distributed.

As might be expected, the cumulative evidence favors neither of the extreme ends of the minimalist/maximalist spectrum. With recent research highlighting limits on the control that palaces could exert geographically and over specific sectors of the economy, it is implausible that all long-distance maritime activity was state sponsored or that there was no scope for merchants to pursue private profit. Nevertheless, the concentration of exotic imported goods at palatial centers on Crete and the mainland is a powerful indicator that elites at these centers actively sought to monopolize access to certain valued products. They were successful at doing so because they uniquely possessed sufficient capital and political authority to acquire and transport high-value commodities over long distances (Bennet 2008: 191). Their interest lay mainly in precious metals and other exotic materials that conferred both symbolic prestige (jewelry, vessels in precious metals, ivory plaques and inlays, etc.) and practical advantage (weapons, superior tools). Perhaps nonpalatial merchants dealt mainly in subsistence goods and utilitarian pottery and tools, and circulated in regional and local rather than international, cross-cultural networks. The Gelidonya and Point Iria wrecks might be seen in this light.

Direct and Indirect Contact

The notion that Mycenaeans were great seafarers voyaging across the

Mediterranean is widely held among scholars who focus on the Greek world, engendered by the broad distribution of Mycenaean artifacts as well as the influence of the Trojan War epics. For an earlier generation of scholars, it was Minoan and then Mycenaean sailors, merchants, and craftsmen who forged the link between the Aegean and the eastern Mediterranean and managed cross-cultural trade between these areas (Kantor 1947). This was partly (over)compensation for prevailing *ex oriente lux* frameworks proclaiming the diffusion of knowledge from the civilized Near East to a barbarian Europe (e.g., Childe 1925). In recent years, the archaeological basis for assigning the Mycenaeans such a prominent role in eastern Mediterranean maritime networks has been deconstructed and reassessed (Bass 1998), and the Homeric epics have been decoupled from a historical Bronze Age context (Bennet 1997; Morris 1997; Raaflaub 2006). Near Eastern and Egyptian texts, along with the strong Syro-Canaanite character of the Uluburun and Gelidonya shipwrecks, have counteracted the Hellenocentric bias. Yet the pendulum continues to swing back and forth: world-systems theory was exploited initially to characterize the Aegean as a dependent “periphery” to a dominant Near Eastern “core.” Subsequently, Nick Kardulias has restored some agency to the Aegean with concepts of “negotiated peripherality” (Kardulias 2007) and “linked maritime exchange cycles” in which Minoans and Mycenaeans participated in eastern Mediterranean trade on relatively equal footing (Kardulias 2009). The applicability of world-systems approaches remains a matter of vigorous debate (papers in Parkinson and Galaty 2009a) and many are not convinced (Burns 2010: 18–19; Cherry 2009; Cline 2009).

Moving beyond theoretical characterizations, the empirical evidence for Mycenaean long-distance voyaging beyond the Aegean is indirect and mostly circumstantial. No Bronze Age boat or part thereof has survived that is unequivocally a Mycenaean vessel. No indisputable evidence exists that Mycenaean ships visited Egypt or the farthest reaches of the Levantine coast, as opposed to trading through Syro-Canaanite or Cypriot middlemen. The case against visits to Egypt involves a qualitative change: after the Minoans were depicted as *Keftiu* bearing gifts to Pharaoh on wall paintings in tombs from the reigns of Hatshepsut (reign circa 1479–1457) to Amenhotep II (reign circa 1427–1400), the Mycenaeans were not depicted in the same way, nor were they mentioned in the Amarna archive at a time when large quantities of Mycenaean fineware pottery reached Akhenaten's capital of Akhetaten (Tell el-Amarna). As noted above, there is a lag of about a century between the Mycenaean occupation of Knossos circa 1450 and the widespread appearance of LH IIIA2 pottery at Amarna

and many other sites (Judas 2011). It took even longer – until the end of the fourteenth century – before Egyptian exports to the Aegean found their way to the mainland more abundantly than to Crete.

There is some evidence for direct contact with Egypt, however. The so-called Aegean List inscribed on the back of one of five statue bases at the mortuary temple complex of Amenhotep III (reign circa 1390–1352) is a roster of place names from the Aegean. Following the ethnics *Tanaja* (thought to refer to mainland Greece) and *Keftiu* (the Cretans) are the names Amnisos, Phaistos, Kydonia, Mycenae, Thebes, Kato Zakro, Methana, Messana, Nauplion, Kythera, Ilios (Troy), Knossos, Amnisos again, and Lyktos. The list has been interpreted as the itinerary of a royal diplomatic mission, perhaps to reaffirm relations with old Minoan trading partners and to visit the mainland centers during the transition from Minoan to Mycenaean control of sea routes into and out of the Aegean (Cline 2007: 194; Hankey 1981). Cline (2007: 194) even links a number of faience plaques, faience scarabs and seals, and a frit vase, found mainly at Mycenae and all inscribed or painted with the cartouche of Amenhotep III or his wife Tiye, with this same diplomatic mission. These objects, most of which were found in later (LH IIIB) contexts, could equally have arrived at various times and in diverse ways. At the very least, however, the Aegean List does show that the Egyptian court was aware of the most important LBA centers on Crete and the mainland. A final bit of intriguing evidence comes from Amarna. A papyrus fragment dated roughly to the mid-fourteenth century by an associated LH IIIA2 stirrup jar bears a painted scene in which a group of Mycenaean-looking soldiers rush to the aid of a fallen Egyptian (Schofield and Parkinson 1994). If this scene reflects a real state of affairs, it suggests the presence of Mycenaean mercenaries in Egypt. According to one recent hypothesis, the imported Mycenaean stirrup jars at Amarna, shown to have been manufactured in the Argolid, held olive oil presented to Akhenaten's royal court as part of a diplomatic exchange, the first of many such exchanges that led to the widespread cultivation of the olive in Egypt (Kelder 2009).

Many favor the Cypriots as the principal intermediaries between Mycenaean Greece and the Near East in the fourteenth and thirteenth centuries (e.g., Bell 2005: 368; Hankey 1967; Mee 2008: 377; Sherratt 2009: 97–98). There are solid arguments for this position. Cypriot pottery is distributed alongside Mycenaean fineware at Levantine sites like Ugarit, Sarepta, and Tell Abu Hawam, but in greater quantities. The amount of Mycenaean pottery at Cypriot sites like Enkomi is

considerably greater than is found at the Levantine sites, but the vessel types are quite similar. Significantly, Cyprus had a history of relations with the Aegean, adopting Cypro-Minoan script and importing pictorial kraters and amphoras specially made in the Argolid for the Cypriot and Syro-Canaanite market. Susan Sherratt (2009: 97–98) proposes that in the thirteenth and twelfth centuries, it was Cypriot small-scale commercial traders who linked the central and eastern Mediterranean in an unprecedentedly direct way, bringing Sardinia and the head of the Adriatic into contact with the eastern Mediterranean. According to Sherratt, the Cypriots not only distributed Mycenaean pottery in the eastern Mediterranean, they came to the Aegean to get it, visiting other Aegean ports of call such as Kommos regularly (Rutter 1999). Against Sherratt's notion is the fact that while Mycenaean pottery imports in Cyprus peaked in LH IIIA, Cypriot exports to the Greek mainland did not become substantial before LH IIIB (Cline 2007: 196).

Until a few years ago, the Mycenaeans were absent in Canaanite archives, but now scholars have identified two letters of the late thirteenth or early twelfth century at Ugarit that appear to give the Akkadian version of the Hittite name for the Mycenaeans, *Ahhiyawa* (Cline 2009: 178; Lackenbacher and Malbran-Labat 2005: 237–38; Singer 2006: 250–52). It is possible that these documents establish some sort of presence for the Mycenaeans at Ugarit.

Another key text implies that the Mycenaeans may have ventured east beyond Cyprus. In a letter to King Sausgamuwa of Amurru, on the northern Syrian coast, Hittite King Tudhaliya IV (reign circa 1237–1209 BC) instructs his vassal to prevent the ships of *Ahhiyawa* from coming into contact with the Assyrians through the ports of Amurru (Cline 1991; Güterbock 1983: 136). The obvious implication is that the ships of *Ahhiyawa* (i.e., Mycenaeans) had reached these ports in the past.

Cline (2009: 170–73) is steadfast in his opinion that Mycenaean ships were making direct voyages to Egypt and the Levant, although he acknowledges that the evidence is inconclusive. He emphasizes that the Minoans and Mycenaeans did not lack the navigational or organizational skills to make these voyages; thus, the rules of eastern ports or actions like the Hittite embargo may better explain the presence or absence of Mycenaean merchant ships. Often lost in the discussion is the fact that few scholars have expressed doubts that from LH I, Mycenaean ships were sailing to Italy and Sicily. Although

maritime routes to the west did not involve a lengthy open-sea voyage similar to that from Crete to Egypt, there were plenty of environmental and navigational challenges along the routes across the Ionian and Adriatic Seas to southern Italy, Sicily, the Aeolian Islands, and eventually Sardinia. An implicit assumption about Mycenaean engagement with the west is that the indigenous inhabitants of the central Mediterranean did not possess the requisite seafaring technology or economic organization to travel east, an impression strengthened by the virtual absence of their finished goods in the Aegean. Whether or not this assumption is correct, the same cannot be said about Minoan or Mycenaean navigational capabilities. It is worth considering instead that the Mycenaeans were able to obtain the commodities they wanted most – Cypriot copper, tin from further east, luxury materials such as ivory – from visiting Eastern ships or by sailing to emporia on Cyprus or the northern Syrian coast, which served as collection points for products from far and wide. In these circumstances, the Mycenaeans may have had little need to make direct voyages to Egypt, which accordingly would have been infrequent.

Mechanisms of Trade

From the evidence outlined above, it becomes apparent that Mycenaean extra-Aegean transactions involved a diversity of settings, participants, and mechanisms of transfer. To get a better sense of the range of trade scenarios, it is worth looking back to a classic treatment of ancient trade in which Colin Renfrew (1975: 41–43) postulated 10 “modes of trade” that specified the participants and the locations where exchanges took place (Fig. 2.5).¹ Renfrew's modes are as follows, with comments added:

- (1) Direct access: *B* has direct access to a resource found at *a* without the involvement of *A*, and without concern for territorial boundaries; there is no actual exchange transaction. The clearest example in Aegean prehistory is the assertion that in the Early Bronze Age (EBA), obsidian was obtained directly from Melos without the mediation of the Melians (Renfrew et al. 1965; Torrence 1984).
- (2) Home-base reciprocity: *B* visits *A* at *A*'s home base, exchanging product *b* for product *a*. These are direct, face-to-face exchanges that are most characteristic of local interaction networks, but could also apply to longer, regional- or interregional-scale interactions involving, for example, a Cypriot ship sailing to Tiryns to drop off a shipment of copper

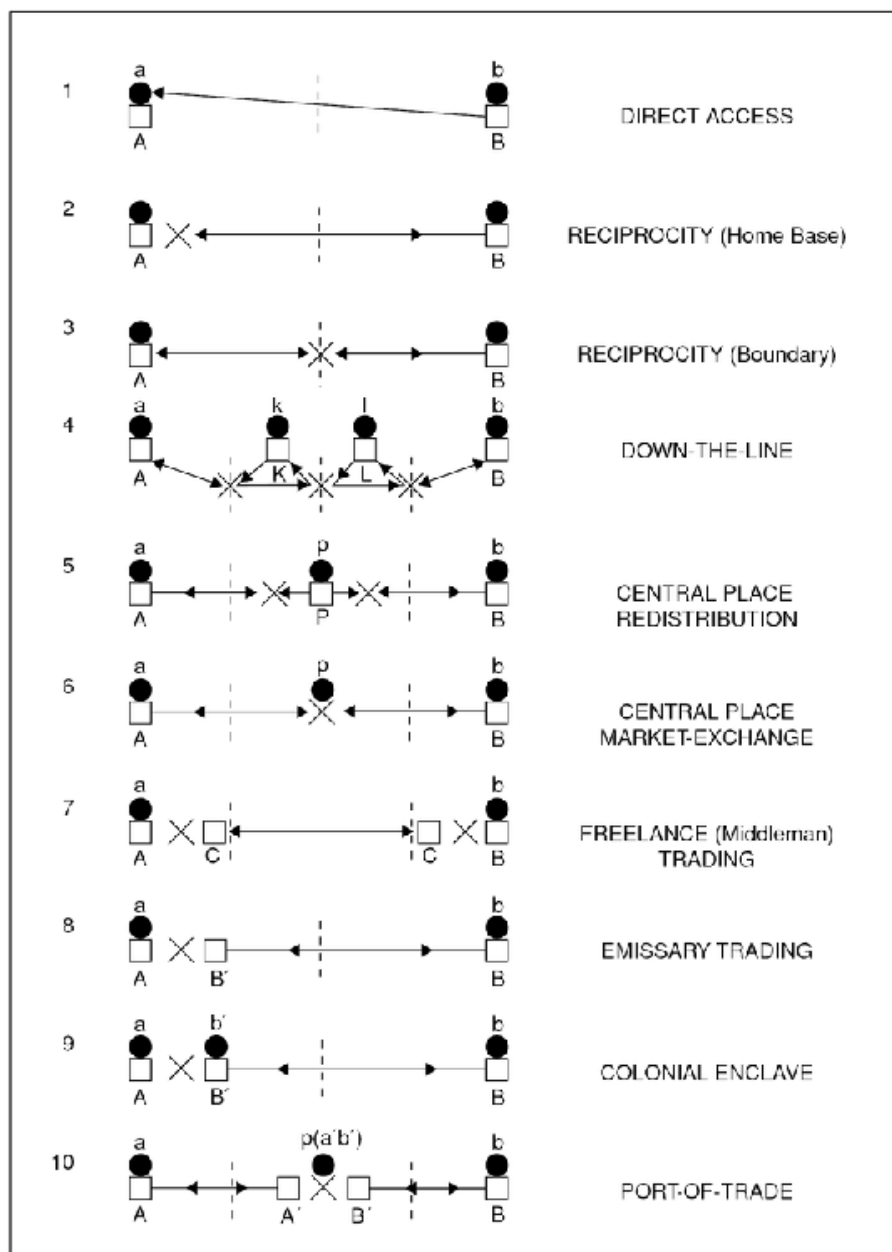
ingots in exchange for pictorial pottery and textiles.

- (3) Boundary reciprocity: *A* and *B* meet at a common boundary to exchange goods. It is often difficult to establish the locations of Bronze Age political boundaries, but one could imagine such trade occurring at frontier zones between Mycenaean polities, between Mycenaean and partly Mycenaeanized zones (e.g., the Bay of Volos with interior Thessaly), or at the outskirts of Miletos. The connotation of neutrality inherent in boundary reciprocity gives these spaces the quality of quasi-emporia or quasi-“ports of trade” as envisioned by Karl Polanyi (1963).
- (4) Down-the-line trade: commodities travel across successive territories in a series of home-base or boundary reciprocity exchanges. In this case, goods move step by step through exchanges between agents departing from their home bases. A good example would be a shipment of Mycenaean pottery from the Argolid conveyed by sea to Enkomi on Cyprus; from there, a load is taken to Ugarit or Tell Abu Hawam along with other goods, and some of these vessels are subsequently transported along overland routes to Canaanite and Mesopotamian sites in the interior.
- (5) Central-place redistribution: *A* takes produce to *p*, rendering it to *P* and receiving something in return; *B* takes produce to *p* and receives from *P* some of *A*'s produce. This is one of Polanyi's classic “forms of integration” by which “primitive” economies were organized (Polanyi 1957; Sahlins 1965). Mycenaean palaces were often cast as centers of redistribution, but the ambiguity of the concept and the implication of a center's altruism in reallocating resources based on others' needs has led many to advocate the use of alternative concepts such as mobilization, in which goods and services are mobilized upward to the palatial center, and there used primarily to support palatial projects and to enhance the wealth and power of the elite (Bennet 2008: 190; Earle 2011; Halstead 2011).
- (6) Central-place market exchange: *A* takes produce to *p* and exchanges it there with *B* for *B*'s produce. *P* is not directly involved in the exchange. This mode best describes open market towns, or periodic market days hosted by a particular town. These surely existed in the Bronze Age Aegean, as they have virtually everywhere where there is historical evidence. We might imagine fish, pottery, and other everyday items circulating in such markets outside of palatial oversight in the kingdom of Pylos, for example, but they have not been

identified on the ground.

- (7) Freelance (middleman) trading: Middleman C exchanges with A at a , and with B at b . C is not controlled by A or B . This form of trade is often referred to as *cabotage* or *tramping*, and differs from down-the-line trade in that the merchant or middleman operates independently of the sellers and buyers of the commodities he takes on or discharges en route. Renfrew (1975: 44) remarks that freelance trading is more efficient than down-the-line trade, since it reduces the number of trips and thus a good deal of effort. The Gelidonya shipwreck is often seen as a tramping vessel carrying a metal tinker and roaming from port to port.
- (8) Emissary trading: B sends emissary B' , an agent under his jurisdiction, to a to exchange goods with A . The Uluburun shipwreck, possibly with Mycenaean emissaries aboard and seemingly headed toward the Aegean with a return cargo destined for a Mycenaean palace, fits this profile.
- (9) Colonial enclave: B sends emissaries B' to establish enclave b' in the vicinity of a in order to exchange with A . The most famous example from the Bronze Age is the Assyrian trading colony or *karum* installed at Kanesh in southeastern Anatolia from circa 1920–1835 BC (Veenhof 1997). An enclave of several thousand Assyrian merchants lived in the lower town, and their commercial transactions with their Anatolian hosts are recorded in roughly 20,000 cuneiform tablets from at least 70 distinct archives. Their trading agenda was relatively specific: Afghan tin and Babylonian woolen textiles were imported from Assur; in exchange, huge quantities of silver and lesser amounts of gold were exported to Assur (Veenhof 1997: 338–39).
- (10) Port of trade: Both A and B send emissaries A' and B' to a central place (port of trade) that is outside of the jurisdiction of either. Polanyi (1963) envisioned the port of trade as a universal type: a place and a mechanism for the safe transfer of goods in a cross-cultural setting. Polanyi's model differs from Renfrew's definition in that the host society might exercise jurisdiction over the port of trade and participate in the business transacted there. The notion of a neutral space was integral to Polanyi's conception because of the potential threat posed by the indigenous and foreign communities to one another. An emporion such as Ugarit on Syria's Mediterranean coast fulfilled this role for a range of trading partners in the eastern Mediterranean; it may be significant that the settlement of Ugarit/Ras Shamra was separated by a

kilometer from the port town (port of trade) at Minet el-Beidha.



2.5 Renfrew's modes of exchange. Renfrew 1975: 42, fig. 10. Courtesy of Colin Renfrew.

Sources of Evidence and Source Criticism

In the concluding section of this chapter, I briefly summarize the sources of evidence for Mycenaean maritime activity, highlighting the strengths, weaknesses, and potential of each category. The main categories are

- (1) Archaeological: The spatial, chronological, and typological distribution of objects of Mycenaean origin found outside the Mycenaean world, and foreign objects found at Mycenaean sites;
- (2) Textual: Linear B archives from the Mycenaean palaces bearing on maritime matters, and references to Mycenaean in Anatolian, Egyptian, or Near Eastern archives;
- (3) Iconographic: Artistic representations of Aegean persons or activities found in non-Aegean contexts, and representations of ships and seafaring activities in Aegean contexts;
- (4) Shipwrecks: A handful of LBA shipwreck deposits recovered in Greek and eastern Mediterranean waters;
- (5) Environmental: Harbor sites and evidence for changing coastal landscapes, as well as data on weather, winds, and currents;
- (6) Ethnographic: Analogies based on information drawn from historical, recent, and living societies.

Archaeological Evidence

The distribution in time and space of the Mycenaean goods exported from the Aegean and the foreign imports into the Aegean has been well documented in catalogues by Cline (1994) and others (Judas 2011; Lambrou-Phillipson 1990; Leonard 1994; Phillips 2008; van Wijngaarden 2002), and the corpus has been subjected to extensive comment and interpretation. As Cline (2009: 164–65) notes, the corpus is not growing very rapidly, and it has inevitable limitations. Yet there are undeniable patterns in the data that enable us to ask informed questions about the dynamics of cross-cultural networks of interaction. Some of these questions can be illuminated using archaeometric characterization studies, such as petrographic and chemical analyses of ceramic fabrics to address sourcing as well as technological styles and traditions. We can only speculate on the magnitude of the perishable, mainly organic, material that moved through these networks, as well as the metals that were destroyed, recycled, and otherwise removed from the Bronze Age archaeological record. But judging from the textual records recovered in the Aegean,

Egypt, and the Near East, the circulation of perishable material must have been immense. We are left with a database that is meaningful and amenable to interpretation, but the small quantities of material and the frequent ambiguities as to the precise dates of objects and their find contexts create challenging problems for quantitative analysis and other measures of significance. Regardless of how the data are analyzed quantitatively, the inevitable conclusion will be that “...long-distance exchange with the Aegean was infrequent, sporadic, and consisted primarily of the importation of small prestige items” (Parkinson 2010: 17–18). Just how to factor in materials that do not survive, and whether these would significantly change the picture, are thorny questions. Furthermore, recovering the exchange events and mechanisms by which the material was transported from its production source to the consumer (and any subsequent transfers in an object's “life history”) may be impossible in an environment of webs of interaction where down-the-line trade, cabotage, and other complex modes of exchange overlap. The stability of categories of use and meaning of an object between the originating and consuming cultures is a further complication, though sometimes its contextual associations are revealing. Changes in practice (e.g., burial or cult practices) can indicate the transmission of intangible ideas where archaeological evidence for meaningful contact is otherwise lacking.

Exchange from region to region within the Aegean world can often be identified by the movement of artifacts with distinctive form, style, or manufacturing tradition. The more local the exchanges become, the less likely that there will be detectable differences in material culture, but if a center of production for a distinctive product is known, for example the volcanic rock-tempered storage and cooking wares of Kolonna on Aigina, movements at very close range can be discerned (see the detailed case study on the Saronic Gulf in [Chapter 7](#)).

Textual Evidence

Contemporary textual references to Mycenaean maritime activity or to the interactions of Mycenaeans with people and places beyond the Aegean are few. They include sporadic references in the Linear B archives, and a small number of mentions of Mycenaeans in Egyptian, Hittite, and Canaanite texts (Bennet 2008: 181; Cline 2009: 175–79).

There are several possible explanations for the near silence of the Linear B archives on exchange within the Mycenaean world and without. One has to do with the narrow temporal scope of the

documents, because the tablets were meant as temporary records and so only those referring to current or very recent activities were preserved. Based on the seasonality of the activities and plants mentioned and not mentioned in the Pylian tablets, it is believed that the destruction of the palace occurred in spring and that the activities recorded therein do not extend back further than six months or so (Chadwick 1994: 191–92). If that is the case, we might imagine that most maritime activity involving palatial oversight would have been in hiatus over the winter. Shipbuilding (Pylos tablets Vn 46 and Vn 879), however, would be ongoing in preparation for the return of major maritime endeavors in the spring. A second explanation is that the palaces did not control maritime trade and thus would not be expected to record an activity outside of palatial purview. It is hard to believe, however, given the attention to building and manning ships, and the priority placed on acquiring and controlling access to raw and exotic materials that could only have arrived by sea, that there would be no meaningful palatial involvement in maritime matters. A third possibility, mentioned already, is that there was an interruption of maritime trade toward the end of the thirteenth century, cutting off seaborne imports. The disturbances that led several palaces to enhance their fortifications and excavate access tunnels to external subterranean springs may also have severed overland communications. Despite these hypothetical disruptions, the Linear B archive at Pylos seems to record normal palatial activity, including feasts and sacrifices, maintenance of palatial industries with their dependent workers, and collection of agricultural goods that seem not to be in short supply.

Mycenaean Greece appears in Egyptian texts as *Tanaja*, and in Hittite and Canaanite texts as *Ahhiyawa* and related terms (Cline 2009: 178). The Aegean List from Kom el-Hetan ensures that the Egyptians were aware of the Mycenaean palatial centers, and the combination of copious Mycenaean fineware and the painted papyrus depicting Mycenaean soldiers at Amarna helps to counterbalance the absence of mention in the Amarna archive. The Mycenaean Greeks are sometimes counted among the *Ekwesh* (= Ahhiyawa?) listed in the Merneptah Stele commemorating the victory of Merneptah (reign circa 1213–1203) over a combined force of Libyans and mercenaries from the northern seas, and they may have formed part of the loosely organized marauders that Ramesses III repulsed circa 1176 BC, according to the Medinet Habu inscription. The recently identified references to Mycenaean in the archive at Ugarit add support to the contention that Mycenaean did voyage beyond Cyprus to Levantine shores.

More extensive than these, however, are a number of Hittite documents that have real historical significance. Presuming that Ahhiyawa refers to a Mycenaean kingdom to the west of the Anatolian coast – and there is plenty of debate on whether that center was located at Mycenae, Thebes, Rhodes, or elsewhere – it is possible to follow the Mycenaeans causing mischief in the western provinces of the Hittite Empire in the fourteenth and thirteenth centuries from their coastal base at Millawanda (Miletos; Latacz 2004: 73–128; Niemeier 1998, 2003). The Ahhiyawa are first mentioned (in the earlier form *Ahhiya*) in the Madduwatta Letter, sent by Arnuwanda (reign circa 1400–1375 BC) to a rebellious vassal chief of the same name to complain of his traitorous activities. The letter recounts that Attarasiya, the “man of Ahhiyawa” and possibly the equivalent of the Helladic name Atreus, joined Madduwatta to raid Alashiya (Cyprus), a Hittite dependency (Bryce 2005: 129–35; Neimeier 2003: 104). Here we have unambiguous evidence of Mycenaeans participating in a naval raid, covering more than 500 kilometers in straight-line distance to reach Cyprus’ westernmost shores. For the better part of the next two centuries, the Ahhiyawa enter the documentary record periodically in both peaceful and hostile interactions. For a time, the king of Ahhiyawa was accorded the title “My Brother,” in the formulaic language of Near Eastern royal diplomacy, for example when Hattusili III (reign circa 1265–1240) remonstrated with the king of Ahhiyawa over the harboring of a fugitive; later in the thirteenth century, the Mycenaeans lost control of Miletos and the name of the king of Ahhiyawa was erased from diplomatic documents. It is difficult to overestimate the importance of the Hittite texts as a unique source of information about Mycenaean activity in the Aegean, and more generally regarding the political geography of Asia Minor and the eastern Aegean. Their usefulness is fully realized when the archaeological record, particularly at Miletos, is seen to corroborate some of the events and relationships described in the texts. Miletos is the subject of a brief case study in [Chapter 7](#).

Early Greek literary texts, particularly the *Odyssey* of Homer, are often called upon for insight on Mycenaean seafaring. We must be skeptical about attempts to read Bronze Age realities into a work set in writing half a millennium after the demise of the palaces, particularly as a growing consensus perceives the world that Homer describes as an Iron Age one (Bennet 1997; Morris 1997; Raaflaub 2006). Nevertheless, it is worth asking whether Homer's descriptions of the conditions of seafaring might apply to the Bronze Age. To what extent did ships and navigational technology (e.g., celestial navigation) change between the Late Bronze and Late Geometric

periods? Had winds, currents, and other environmental conditions (such as harbor silting or built harbor constructions) changed in significant ways? Equally important is the possibility that persistent traditions of seafaring knowledge and certain maritime *mentalités* that had survived for centuries might be recoverable from Homer. These topics are explored in Chapters 3 and 4.

Iconographic Evidence

A large and constantly expanding literature addresses and debates the technical characteristics of ship form and construction in the Late Bronze Age Mediterranean. (General overviews can be found in Basch 1987; Mark 2005; McGrail 2001; Wachsmann 1998; Wedde 2000.) During the Bronze Age, images of ships were painted onto pottery and wall frescoes and incised, engraved, embossed, and impressed onto pottery, stone, seals and sealings, and metal jewelry. A surprising fact is that Aegean Bronze Age civilizations, ostensibly linked so closely with the sea, depicted watercraft so infrequently. A recent catalogue of ship representations from the Aegean Bronze Age counts approximately 80 painted ship images from sherds or whole vessels; more than 20 on the painted wall frescoes from the West House at Akrotiri on the island of Thera and a few others from fragmentary frescoes at Pylos, Iklaina, and Mycenae; 138 from seals and sealings; 43 incised, impressed, engraved, or embossed on ceramic, stone, or metal objects; nearly 50 watercraft models; and a further 26 as Cretan hieroglyphic or Linear A signs (Wedde 2000). In all then, we have fewer than 400 surviving images of ships for a period of 2,000 years.

Inferences about the ships depicted in iconographic representations are often controversial because there is no consistent artistic convention. Bronze Age artists did not necessarily attempt or achieve faithful reproductions of the details of actual ships. This discrepancy may have resulted from deliberate stylization and abstraction (innovation), imitation of contemporary examples of ship iconography, or the use of a pattern book of ship icons. Often, the medium severely limited the amount of accurate detail that could be rendered: the miniscule working surface of seals necessitated executing many details in abbreviated, schematic form, and leaving others out altogether. Two-dimensional representations on any medium make it difficult to estimate a ship's beam or to interpret features such as appendages to the decks, bows, or sterns. Even in the larger formats of frescoes and pottery surfaces, details may be represented in ambiguous or stylized fashion, leaving modern scholars

to speculate on the meaning of painted lines and other flourishes. These contingencies can make it difficult to reconstruct a typology of vessel types or to identify regional variability in ship construction.

A particular frustration is that within this limited corpus, virtually nothing is known about small boats of the kind that should have formed the backbone of short-distance maritime connectivity. Such small craft stand little chance of preservation as shipwrecks except in the kinds of contexts – peaty or waterlogged deposits, for example – that are rare in the Aegean. In the absence of hull remains, wrecks of small vessels, with their diminutive cargoes, are unlikely to be recognized as such by even the most fine-grained underwater surveys. Certain boat models and seals are thought to represent small craft, though scale is difficult to infer from them, and in general artists apparently preferred to depict the more impressive galleys and trading ships of the time. For this reason, the “Flotilla Fresco” from Akrotiri on the Cycladic island of Thera takes on a disproportionate significance in understanding Bronze Age Aegean small craft. The fresco's narrative scene shows a full range of vessel types, including several small canoe-like boats and other vessels of modest size, propelled by paddles, oars, and sails.

The Flotilla Fresco

The so-called Flotilla Fresco was part of a frieze that adorned the upper walls of Room 5 in the West House at Akrotiri on Thera. It occupied the southeastern corner of the east wall and the south wall of the small, 4 × 4 meter room (Warren 1979: 117, fig. 1). Opposite on the north wall, scenes of a shipwreck or sea battle are depicted, along with marching soldiers. The flotilla scene shows a procession of ships of various kinds, apparently leaving one coastal settlement (the “Departure Town”) and arriving at the harbor of a second (the “Arrival Town”; Fig. 2.6). The second town is built above a double harbor formed by a larger and a smaller embayment divided by a narrow promontory. In both towns, spectators gather near the shore and in houses upslope amidst an atmosphere of excitement. The flotilla is composed of seven large sailing ships, highly ornamented with decorative elements, *ikria* (stern cabins), and awning structures amidships under which well-dressed individuals sit. Only one of the ships is moving under sail, however. The rest are being paddled awkwardly by men straining to reach the water line. Seven other boats are part of the scene: one medium-sized boat is being rowed out of the Departure Town; two small boats with awning structures are moored in the larger of the harbors at the Arrival Town; three small

canoes are drawn up on the beach of the smaller harbor of the Arrival Town; and one canoe is being rowed out to meet the arriving flotilla, perhaps to act as a pilot guiding the large ships to safe anchorage.



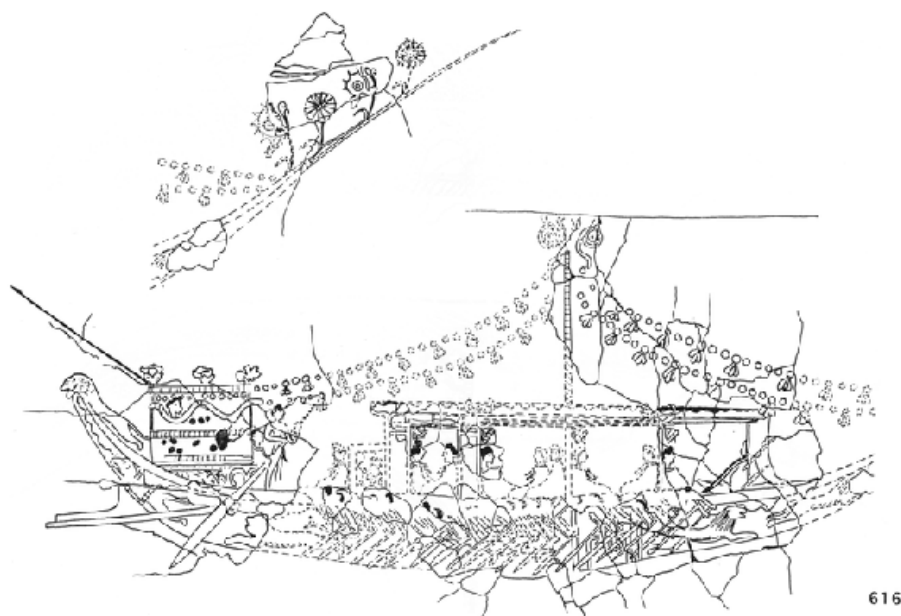
2.6 The Flotilla Fresco, West House Room 5, Akrotiri. Doumas [1992](#): 68, fig. 35. Courtesy of the Thera Foundation – Petrikos M. Nomikos.

An interpretation of the scene as representing a ceremonial procession of some type is persuasive for many reasons (Marinatos [1974a](#); Morgan Brown [1978](#); Strasser [2010](#); Warren [1979](#)). Most notable are the unusual circumstances of the ships and their occupants, which suggest that this could not be a routine military or commercial exercise. The large ships are all decorated at the prow and stern, and some have hulls painted with figural motifs or abstract designs. The most elaborate (Spyros Marinatos' "flagship") has a hull decorated with lions and dolphins, and a tall mast from which dress-ship lines festooned with crocus-bloom pendants run to the prow and stern (Fig. 2.7). The fact that six of the seven ships are being paddled is curious, because by LH I this archaic means of propulsion would have long been abandoned in favor of oar and sail, particularly for ships of this size as the paddlers' exertions attest. The other installations aboard the ships are similarly out of the ordinary, if not so quaint. The *ikria* are small stern cabins consisting of a framework of wooden posts hung with a screen of oxhide or woven fabric (Shaw [1980](#), [1982](#); Wedde [2000](#): 132–34), where the shipmaster or an honored guest might sit. *Ikria* are also found as large-scale fresco motifs in Room 4 of the West House, and at Mycenae (Shaw [1980](#), [1982](#)). Awning structures cover seated passengers who take no part in paddling the ship; boar's tusk helmets suspended from the roof of some awnings indicate that the passengers are soldiers. Their

decorative tunics, stiff-looking and hiding their limbs, resemble the costume later worn by elite chariot passengers depicted on pictorial kraters of the thirteenth century BC. The ikria and awnings would have been a great hindrance to the efficient conduct of military or commercial business; it is believed that they were detachable structures that could be assembled for special occasions and then disassembled easily (Morgan 1988: 139; Shaw 1982: 55). The nature of the ceremony is a matter of speculation, but two of the more plausible suggestions are a nautical festival celebrating the inauguration of a new sailing season in spring (Morgan 1988: 143–45; Morgan Brown 1978), and a cultic procession commemorating the third-millennium Cycladic longboats (Wachsmann 1998: 108–113), which were sufficiently impressive and symbolically charged for their time to have lived long in memory. Because there is only one ship under sail, the ceremony might even reenact the introduction of the sailing ship to Crete toward 2000 BC.

The Flotilla Fresco is the single most important visual document of the Late Bronze Age for coming to terms with Aegean seafaring. It shows a range of ships and boats with sufficient realism that we can ascertain details about their form and construction, rigging and sails, methods of propulsion, and possible functions, in spite of the ceremonial modifications. The coastal scene also confirms some basic features of Bronze Age seafaring. The Arrival Town's double harbor, formed by a narrow headland with flanking embayments, was a preferred harbor topography in the Bronze Age. These are clearly natural harbors, as no durable harbor constructions are visible; instead three small canoes are pulled up onto the sandy beach of the smaller harbor, while two medium-sized vessels appear to be anchored in the middle of the larger harbor. The larger harbor may have a deeper approach suitable for bigger seacraft. The Minoans did have one kind of dedicated harbor structure, the ship shed, located some distance from the shore and used for storage of ships and nautical equipment during the winter months (see Chapter 5). A portion of the fresco on the north wall of West House Room 5 depicts soldiers marching to the right of a large building partitioned into narrow, open galleries facing the shore, very similar in form to Building P at Kommos, the best known archaeological example of a ship shed. Building P is dated to the later fourteenth century BC, some two centuries or more later than the Flotilla Fresco, but another putative ship shed at Gournia may have been built in MM IIIA (Watrous 2010), earlier than the Flotilla Fresco and indicating a long tradition into which the example at Akrotiri fits comfortably.

A detailed discussion of the watercraft depicted in the Flotilla Fresco is presented in [Chapter 3](#), and further comment on the harbor setting is made in [Chapter 4](#). The main limitation of the Flotilla Fresco for our purposes is the chronological gap between the massive eruption that destroyed Akrotiri and the earliest verifiable representations of Mycenaean ships and boats. The debate over the date of the eruption is as contentious as ever (see recently the papers in Warburton [2009](#)), but whether it occurred in the later seventeenth century or sometime in the sixteenth, the connection between the ships and boats of the Flotilla Fresco and the earliest ships represented in Mycenaean art in the later fourteenth century (LH IIIA2) would seem tenuous, but recent revelations of ship frescoes at Pylos and Iklaina may help to clarify the evolution of ship technology during the intervening period ([Chapter 3](#)).



2.7 “Flagship” from the Flotilla Fresco, Akrotiri. Wedde [2000](#): Catalogue 616. Courtesy of Michael Wedde.

Portrayals of Mycenaeans abroad are rare, and they seem only to be recognizable as soldiers wearing boar's tusk helmets. In addition to the Amarna papyrus, there is a warrior, possibly wearing a boar's tusk helmet, painted onto a sherd found at Hattusa and dated to circa 1400 BC (Niemeier [2003](#): 105, fig. 4). Mycenaeans were not among those painted on tomb walls in Egypt, as were the Cretans before them. Nor do any of the Aegean-style painted frescoes from the East – at Tel Kabri in Israel, Alalakh and Qatna in Syria, and Tell el-Dab'a in Egypt

– appear to have Mycenaean connections (Cline et al. 2011).

Pottery and Other Media

Continuing on the theme of the relationship between the Minoan/Cycladic and the Mycenaean seafaring traditions, illustrations of distinctly Mycenaean ships on pottery and other media are curiously late. The Mycenaean oared galley, which may have been an entirely new design (Wedde 2005: 29), is first portrayed on pottery in LH IIIB, but not in great numbers, and other types of craft are generally not depicted at all. Surprisingly, images of the galley on pottery increase after the collapse of the palaces in LH IIIC, a pattern that has social and artistic dimensions that are explored in Chapter 3. Ship images on pottery are subject to all of the ambiguities of artistic representation, with the additional challenge of working on a curved surface.

Boat models in clay are the only three-dimensional representations of Bronze Age watercraft (Fig. 2.8). Models help give a sense of the beam, as well as features such as keels (either painted, or represented three-dimensionally as swellings or protrusions in the clay) and thwarts. Some surely represent small boats rather than the larger ships that predominate in all other media, but their typically crude execution makes determination of dimensions speculative. Of the approximately 50 whole or fragmentary boat models, more than 20 have been found on the mainland, and these range in date from LH IIIA to LH IIIC (Wedde 2000: 307–312). EBA boat models come from Crete and the Cyclades; during the MBA they are limited to Crete; and in the LBA they are found on Crete, in the Cyclades, and on the mainland. Most of the boat models survive as fragments only, limiting the amount of useful information that can be extracted from them.

Seals and sealings with ship imagery come almost exclusively from Crete, where the corpus numbers more than 125, with increasing frequency through the Bronze Age until the destruction of the neopalatial palaces at the end of LM IB (Wedde 2000: 331–49). Fewer than ten have been found on the mainland, in contexts ranging from EH III/MH I to LH IIIB. These undoubtedly represent sporadic arrivals from Crete. As mentioned above, realistic details are difficult to render on such small surfaces, and to make matters more challenging there is a large subclass, the so-called talismanic seals, with particularly abstract designs (Wedde 2000: 134–41).

Shipwrecks

Shipwrecks are of immeasurable value in offering single-event horizons and the possibility of full assemblages of associated material being preserved together, though the remains are still susceptible to decay, movement or destruction by currents or sea creatures, and mixing with other wrecks and dumping events. They are direct material evidence for the form and construction of ships and boats; for the cargoes, personal effects, and subsistence items taken on board; and for the location of the vessel when it foundered. The frequent preservation of organic material can open a world of information about the use of substances that rarely survive in the terrestrial archaeological record; the Uluburun project is a shining example of the vast amount of new information that can be gleaned from specialist analyses of the excavated materials. Indirectly, the ship's contents can enlighten about the origin, movements, and final destination of the doomed voyage; about the modes of exchange and purposes of travel represented; and about the social, political, and economic conditions of the time.



2.8 Clay boat model, Asine LH IIIC. After Spathari [1995](#): 51, fig. 51.

Three LBA shipwrecks in the Mediterranean have been thoroughly excavated and published to date: the Uluburun and Cape Gelidonya wrecks off Turkey's southern coast, and the wreck at Point Iria in the Argolic Gulf on the Greek mainland. A fourth excavated shipwreck, a Minoan ship of MM IIB date off the coast of Crete at Pseira, is nearing publication (Hadjidaki and Betancourt [2005–2006](#), [2006](#)). A fifth, near eytan Deresi on the southwestern coast of Turkey, was fully excavated and described in preliminary reports (Bass [1976](#); Margariti [1998](#)), but is not considered here because there is a high probability that it does not actually belong to the Bronze Age (Bass [2005d](#)). Other underwater concentrations of artifacts that have been interpreted as Bronze Age shipwrecks, although without the benefit of timber remains or systematic excavations, include Aegean wrecks off Dokos island (EBA) and at Kyme off the coast of Euboea (LBA, with nineteen “pillow” type copper ingots); and a number of scattered cargo sites on

the Israeli coast that are difficult to interpret (Lolos 2001; Wachsmann 1998: 205–211). In the absence of excavation, we cannot rule out that the remains may represent palimpsests of material from multiple wrecks, or mixed shipboard and land-based debris near harbor sites.

The problem of working back to the Bronze Age ships represented by these sites is exacerbated by the near absence of surviving ship remains. Only the Uluburun and Gelidonya shipwrecks have produced small amounts of hull remains, on which basis the Uluburun ship is estimated to have been 15 meters long and 5 meters wide, and the Gelidonya ship 9–10 meters long but of uncertain width. This material provides crucial information on such aspects of shipbuilding as general hull construction and joinery methods, but is insufficient to furnish independent confirmation of inferences drawn from iconography on a host of unresolved questions. Neither of these wrecks is likely to be a Mycenaean vessel, but as types they must have been familiar in the Aegean.

The most interesting aspect of the four excavated shipwrecks is that they possess contrasting cargo assemblages and exemplify a range of distinctive modes of exchange, as defined above. The Uluburun wreck, with its enormously valuable cargo of precious metals and other luxuries, epitomizes the directional, emissary exchange so vividly described in Near Eastern texts, while at the same time carrying large quantities of non-elite commodities such as poor-quality Cypriot pottery, which merchants on board operating in freelance mode could trade at ports of call (Pulak 1997, 1998). The Gelidonya ship also carried raw metals: 34 copper oxhide ingots (about one ton), 20 bun and 19 slab ingots of bronze, and a few badly degraded tin ingots; more prominent, however, is an inventory of more than 250 pieces of bronze scrap along with intact tools for coppersmithing, and the absence of luxury finished objects and raw materials such as ivory (Bass 1961, 1967, 1988, 1990). The Gelidonya ship is seen as a prime example of independent, entrepreneurial cabotage, that is, freelance exchange, but with a specific focus on itinerant metal working. This in itself is fascinating, because itinerant artisans are often postulated to explain the appearance of foreign styles, but rarely are the toolkit and the peripatetic lifestyle of the itinerant craftsman so clearly captured. The Point Iria and Pseira shipwrecks seem to have been small ships plying local networks with cargoes of foodstuffs and other staples transported in utilitarian pots, though there are some points of difference. The cargo of the Point Iria wreck is composed exclusively

of pottery (a small anchor found nearby may also belong to the wreck) of three distinct groups: eight Cypriot pithoi, eight Cretan LM IIIB2 transport stirrup jars, and nine assorted Helladic vessels, mainly storage jars and amphoras, but also including a decorated deep bowl that helps to date the entire assemblage to LH IIIB2, probably closer to 1200 BC. With this sort of mixed assemblage, several interpretations of the ship's origin, movements, and mission are possible. It may have left a home base on Cyprus, traveled to Crete, picking up commodities packed in coarse stirrup jars, and continued on to the Argolid – where we know Tiryns had ties to Cyprus and Crete at the time – to conduct business and pick up mainland goods, before finally wrecking on the shallows off Point Iria. Because these transport vessels are so portable, however, the ship could equally have come from Crete, or perhaps most likely of all, it belonged to a local trader carrying produce to neighboring settlements in the Gulf in recycled storage vessels (Dickinson 2006: 35). Cheryl Ward (2010: 157) cogently interprets the Point Iria wreck as “...the cargo of a small, open boat, not unlike a small modern caique, taking on merchandise at a central location and then traveling within a close-knit network of settlements along the coast.” She also reminds us that the detailed and imaginative reconstructions of the ship and its activities that have been published have no basis in material evidence (Ward 2010: 157; see Vichos 1999 and especially fig. 16). Finally, the Pseira wreck is dated to MM IIB (roughly the middle to late eighteenth century) by dozens of complete transport amphoras and hole-mouthed jars in local fabrics of the Mirabello region (Hadjidaki and Betancourt 2005–2006: 84–85; P. P. Betancourt, personal communication, 2011). The local provenience and utilitarian function of the pottery have led the excavator to the provisional interpretation of the wreck as a small ship engaged in local-scale trade around the Gulf of Mirabello, which we might imagine as the center of a maritime small world. In the Point Iria and Pseira shipwrecks we have, at last, a glimpse of local-scale maritime networks.

Environmental Evidence

As emphasized in the first chapter, the environmental settings of Mycenaean coastal worlds are anything but static; they are constantly undergoing modification by human and natural agents. Some systems are more stable than others. As we shall see in [Chapter 4](#), the weather- and climate-related phenomena that make up the Mediterranean maritime environment – including winds, currents, temperature, and storm patterns – fluctuate on a regular basis but in their broad patterns have not diverged significantly since the Bronze Age. The

ability of mariners to cope with environmental challenges through technology and experiential knowledge may have changed radically through the ages, however, so we cannot assume, for example, that Mycenaean captains and navigators possessed the same skill set as Homer's or Hesiod's seafarers.

The changes that have occurred in coastal landscapes and seascapes are generally more extreme, and these are examined in [Chapter 5](#). Coastlines are exceptionally vulnerable to a host of natural alterations resulting from earth processes operating at scales from global to local. Global sea-level change has had a strong effect in some areas. In particular, a maximum marine transgression some 6,000 or 7,000 years ago that flooded Mediterranean land masses and created vast embayments on many Mediterranean coastlines was followed by a stabilization of global (eustatic) sea level and the gradual infilling of these bays with sediments over time. One result is that certain important harbor sites that were open to the sea in the Bronze Age – Troy, Ephesos, and Miletos on Asia Minor's Aegean coast are striking examples – are now stranded literally kilometers inland today. An even more insidious process – because it is more localized and harder to detect on the landscape – is tectonic activity. In the earthquake-prone Aegean region, subsidence and uplift are common coastal processes. There may be regional tendencies – for example, the Corinthia, where the Corinthian Gulf coast is rising while the Saronic Gulf coast is subsiding – but the complexity of the fault systems is such that sites separated by only a few kilometers on the same coastline can have quite distinct tectonic histories (Nixon et al. 2009). Human activities may promote change in coastal embayments, usually by accelerating rates of sedimentation through practices such as extensive agriculture and grazing, which release soil to be eroded and transported to the sea.

Even relatively small changes in a coastline can have transformative effects, rendering a once-inviting harbor unusable by separating it from the sea, making the approach too shallow, altering its protective configuration, or leaving a new set of navigational hazards in the inshore waters. These changes exacerbate the already low visibility of Mycenaean anchorages that can be attributed to the fact that Bronze Age communities did not build permanent harbor facilities such as piers, quays, or breakwaters, so far as we know. Instead, they pulled smaller boats onto the beach, or anchored just offshore, exactly as depicted in the Flotilla Fresco at Akrotiri. Changes in the coastline

play a key role in understanding all of the coastscapes examined as case studies in [Chapter 7](#) (Kalamianos, Miletos, and Dimini).

Integrated methods of geomorphological observation, geological coring, and geophysical prospection for paleocoastal reconstruction are well established in the Mediterranean, and the database of case studies of the coasts of Greece and Turkey is constantly growing. The basic principles and many examples of this work are examined in [Chapter 5](#), and the prospects for integrating such programs with archaeological investigations of local and regional maritime worlds are assessed. These studies are essential, but they are expensive and time consuming; they often require many seasons of fieldwork and the results of various analyses may appear only gradually over a period of years. Particular care must be taken that the archaeologist and earth scientist share compatible understandings of the problems being addressed and the expectations of results.

Historical and Ethnographic Evidence

One of the benefits of gathering information from historical, recent, and living societies is that, like a well-preserved shipwreck, they offer categories of data that are nearly impossible to recover in a prehistoric archaeological context, and they provide insight on how materials are created, used, and discarded in living societies. And like shipwrecks, they can alert the archaeologist to new ways of thinking. The dangers of simplistic application of ethnographic analogy are well known; the past is indeed a “foreign country” and the gulf that divides the Bronze Age from today must be kept clearly in focus. Yet ethnographic and ethnoarchaeological studies may provide plausible comparative data and even models for Mycenaean coastal worlds. There are numerous ethnographic studies of maritime societies and maritime cultural landscapes around the world, a good many in Oceania, where ancient traditions of seafaring persisted on isolated islands until recently. Several categories of information might be queried for useful comparisons and contrasts; among these are shipbuilding and navigational technology, the organization of maritime coastal communities, and the transmission of maritime knowledge from one generation to the next. In some of these areas, the practices of South Pacific seafarers are exceptionally enlightening, for example the preservation and transmission of maritime knowledge, and the status of the maritime community within the larger society. I incorporate discussion of these points as they relate to Mycenaean seafaring in several chapters.

It may be possible to get this kind of information closer to home. As part of the Saronic Harbors Archaeological Research Project (SHARP), which I co-direct with Daniel J. Pullen (Tartaron et al. 2011), our colleague Lita Tzortzopoulou-Gregory collected a number of oral histories in interviews with older residents of Korphos, until recently a traditional fishing village. A major focus of these interviews has been to record as much information as possible about life in a maritime coastal community prior to the adoption of motorized boats and before the advent of the modern economy; that is, before the Second World War. The results are, in my opinion, scintillating, because they bring to life aspects of the maritime orientation and economic organization of the community, as well as patterns of interaction by sea that are not merely economic but also social, in the same Saronic setting where the Mycenaeans prospered in the thirteenth century BC. Information from the oral histories is assessed in the Saronic Gulf case study in [Chapter 7](#).

A Note about Theory

This book is not conceived as a heavily theoretical work, but an essential component of my approach is a theoretical framework that explicitly identifies a structure for maritime interaction at all spatial and temporal scales, and offers a model for the way that these systems are expected to work that is empirically testable. I provide this in [Chapter 6](#), where I begin by focusing on the uniqueness of the coastal zone as a useful empirical category. Then, in order to construct a dynamic framework for interaction in Aegean coastal zones, I adopt the *maritime cultural landscape* (Westerdahl 1992) as an overarching concept, and proceed to define four distinct but nested *maritime interaction spheres* that comprise it, based primarily on geographical scale but also incorporating cultural dimensions. From smallest to largest, these are the *coastscape*, the *small world*, the *regional/intracultural maritime interaction sphere*, and the *interregional/intercultural maritime interaction sphere*. I draw on social network theory to explain the mechanisms by which these relationships are established and change over time. These concepts are applied to the case studies explored in [Chapter 7](#). More generally, my hope is that this theoretical framework is sufficiently useful and flexible to be adopted in modified form in a range of times and places.

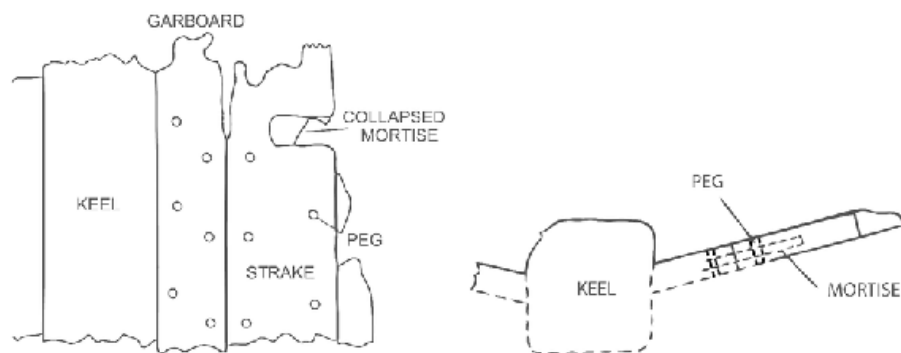
Three Ships and Boats of the Aegean Bronze Age

An essential baseline for understanding the coastal interface between sea and land in the Aegean Bronze Age is knowledge of the ships and boats active at that time: the range of their forms and functions, their operating limits and geographical ranges. A voluminous and constantly expanding scholarship exists on all aspects of Aegean Bronze Age seacraft (Basch 1987; McGrail 2001; Tzalas 1989, 1995a, 1999, 2001, 2002; Wachsmann 1998; Wedde 2000). Much of this discussion remains speculative because, as we have seen, there are few surviving physical remains, and many of the details shown on images and models of Bronze Age vessels are highly ambiguous as to identity and function. Moreover, certain classes of craft that must have existed are represented poorly or not at all. The objective of this chapter is to summarize the salient features that are known or can be inferred about Bronze Age, particularly Mycenaean, seagoing and coast-riding vessels. Here and in the chapters to follow, ship images are cited using the numbering system of Michael Wedde's catalogue in *Towards a Hermeneutics of Aegean Bronze Age Ship Imagery* (Wedde 2000). In an image citation, a reference such as W612 simply means Wedde, catalogue number 612 (one of the Flotilla Fresco vessels). The virtues of Wedde's system are that it is rational and easy to use, each item is illustrated and discussed thoroughly, a handy concordance with other catalogues is included, and it is easily accessible in libraries.

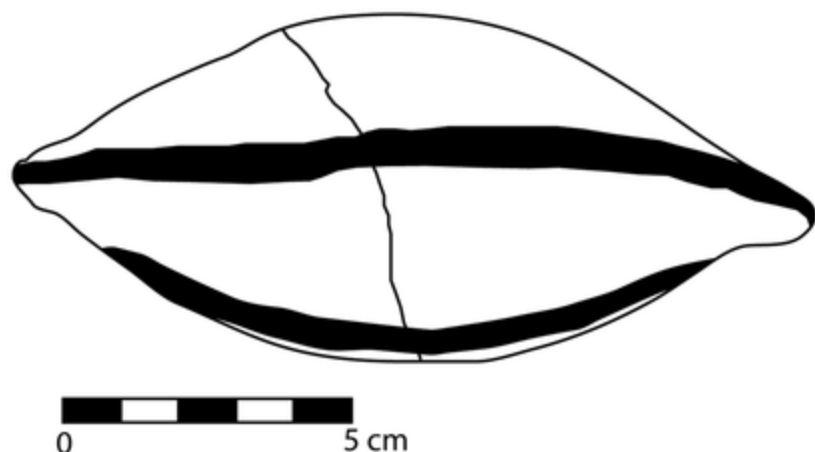
General Characteristics of Mediterranean Bronze Age Ships and Boats

All evidence suggests that Mediterranean Bronze Age vessels were constructed hull first rather than frame first, and there is in fact no certain evidence of frames in the small amount of hull material recovered to date (Pulak 2002: 616). The earliest known frame-first ships date to the mid-first millennium AD, based on recent finds from Tantura Lagoon near Haifa (Kahanov 2001, 2009) and the Theodosian Harbor at Istanbul (Pulak 2009). There were two basic methods of joining the planks and other structural members of the ship: mortise-

and-tenon joinery, and lacing or sewing (Fig. 3.1). The two Mediterranean Bronze Age shipwrecks from which pieces of the hull have been preserved, those at Uluburun and Cape Gelidonya, were both made with locked mortise-and-tenon joinery (Bass 1989; Pulak 2002). Mortise-and-tenon joinery is well known from earlier and contemporary Egyptian vessels (McGrail 2006: 60), but the technique of locking or pegging the tenons into place with treenails was possibly an innovation of Canaanite shipbuilders in the mid-second millennium BC.¹ The locked mortise-and-tenon joint was part of a wider repertoire of woodworking techniques, as illustrated by roughly contemporary tables excavated at MB II Jericho (circa 1750–1650 BC: Wachsmann 1998: 240–41, fig. 10.28) and in Shaft Grave V at Mycenae (Muhly 1996). Despite the fact that the Uluburun and Gelidonya hulls were joined in this way, ships with sewn planking persisted well into historical times. The hulls of a number of Mediterranean wrecks from the period 600–100 BC are either fully sewn or partly sewn and partly joined by mortise and tenon (Mark 2005: 45–68; McGrail 2006: 61).² Most experts accept, however, that the Uluburun and Gelidonya ships were of Levantine or Cypriot, not Mycenaean, origin. There is no consensus on when shipwrights in the Aegean world began to employ mortise-and-tenon joints. Some interpret the boat that Odysseus fashioned to depart from Calypso's island (*Odyssey* 5.234–57) as a mortise-and-tenon joined boat (e.g., Casson 1995: 217–19), which would establish the Late Geometric period as the minimum age for this technique's appearance in the Aegean. Others, however, read into the same passage a sewn vessel (Mark 2005: 94), and Samuel Mark (2005: 63–64) in fact places the transition from sewn to mortise-and-tenon joinery in the sixth century BC, as a specific modification to accommodate large, heavy amphora cargoes and burgeoning polis-supported navies. We cannot assume that the Mycenaean used this technique, but even if they did, many hulls, particularly those of smaller ships and boats, undoubtedly continued to be partially or completely sewn.



3.1 Mortise-and-tenon joinery. Drawing by Felice Ford after



3.2 Painted keel on boat model, Asine LH IIIC. After Vichos and Lolos 1997: 333, fig. 21.

The Uluburun ship had a keel that projected into the interior of the hull, rather than outward as was typical of most ancient Mediterranean hulls (Pulak 2002: 618–19). Boat models from the Mycenaean world of late palatial and postpalatial times show the keel as a painted longitudinal line on the inner bottom surface (e.g., Kynos LH IIIC models W332, W333; Fig. 3.2) or a protrusion on the external bottom surface (Mycenae LH IIIC model W312; Karaminou 2002: 446).

A range of appendages and devices on the bow, stempost, and stern are portrayed on the ships of the Flotilla Fresco (Wedde 2000: 119–30, figs. 9–11; see Fig. 2.7). The larger vessels have bowsprits, or spars, running from the stempost as decorative devices or to fasten the stays (Wedde 2000: 215). Those on the ships participating in the procession are long and decorated with symbols of birds, dolphins, butterflies, and suns. These sprits were apparently detachable (Wedde 2000: 120). Elaborate bowsprits are not characteristic of Mycenaean vessels, but the stempost (the upright continuation of the keel at the bow) often terminates in the head of a bird or other animal, sometimes rendered realistically and in other cases abstractly (Fig. 3.3). These figured stemposts are diagnostic of late Mycenaean ship depictions of LH IIIB and LH IIIC (Wedde's [2000: 123–24] Skyros and Tragana clusters). The prevalence of bird heads as figureheads accords well chronologically with the depiction of birds (along with other motifs including fish, bulls, octopi, and chariot scenes) often rendered in a

similar fashion on painted Aegean and Aegean-style pictorial pottery beginning in LH IIIA in the Argolid at Mycenae and Tiryns (Günter 2000). Subsequently in LH IIIB, an industry centered in the Argolid produced pictorial vessels for export to Cyprus. In LH IIIC, this tradition continued with the “Close Style” at Mycenae and Tiryns, and with other local styles in Greece, the eastern Aegean Islands, coastal Asia Minor, and Cyprus. This tradition then influenced the Philistine Monochrome and Bichrome pictorial pottery as migrants from the Aegean and Cyprus contributed culturally to the formation of the historical Philistines in the twelfth and eleventh centuries (Bunimovitz 1998; Dothan 1998; Yasur-Landau 2005, 2010). Thus the pattern of bird motifs on pottery and ship representations demonstrates continuity bridging the Aegean palatial and postpalatial worlds and involving broad maritime contacts (Meiberg 2011).

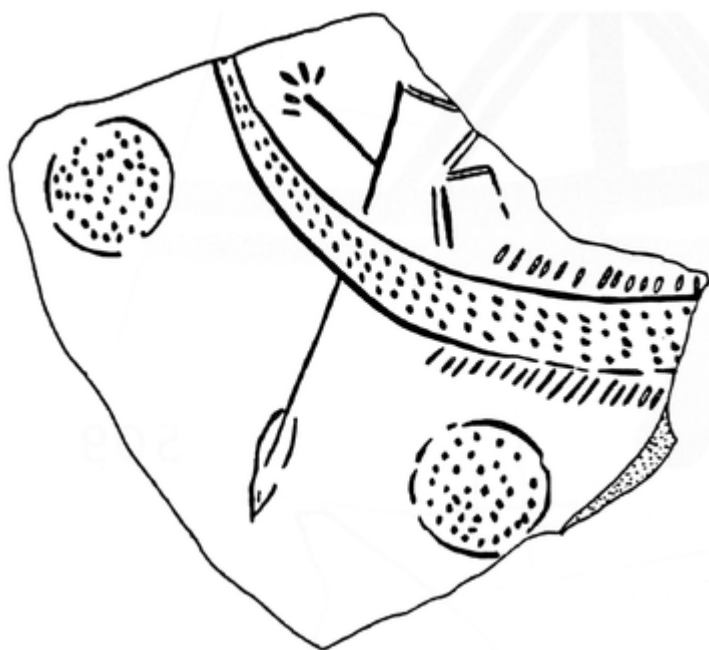


3.3 Bird-head stempost decoration on a straight-sided alabastron, LH IIIC Middle, Tragana. Wedde 2000: Catalogue 643, after Korres 1989: 200. Courtesy of Michael Wedde.

Ships and boats were propelled by one or more of three instruments: paddle, oar, or sail (Wachsmann 1998: 247–54).³ Anyone who has paddled a canoe and rowed an oared boat will immediately understand the difference in these means of propulsion. Paddling was the earlier form and rowing an innovation in which the pivoting of an oar on a grommet or oarlock increased power and used energy more efficiently. Although paddling continued in use during the Bronze Age in small craft and for cultic use, oared vessels were well established by the later third millennium in Egypt. In the contemporary EBA Aegean, longboats of the Cycladic islands employed up to 25 or more paddlers (Broodbank 2000: 99). It is possible that the shift from paddle to oar as the primary means of propulsion took place as part of an infusion of maritime technology that also brought the sail to the Aegean near the end of the Early Bronze Age. This transformation is evident in the changing depictions on pottery, seals, and models that characterize the developmental sequence from Wedde's “Syros” (EC/EM/EH II) to

“Platanos” (EM III–MM III) types (Wedde 2000: 45–52). These changes had other implications for hull design, including broadening the beam to accommodate the mast and rigging as well as the positioning of oars and oarsmen.

Another prominent feature related to propulsion was the steering oar (or quarter rudder, taking the name from its usual position projected over the starboard quarter near the stern), almost certainly attached to the side of the hull by some kind of strap.⁴ The steering oar's function is to redirect water past the hull to impart a turning motion to the vessel, and by 3000 BC in Egypt it was found to be a necessary aid to steering. The earliest clear depiction in the Aegean of a steering oar, in this case with a tiller attached, comes from an Early Cycladic III *askos* from Phylakopi (W416; Wedde 2000: 314; Fig. 3.4). There is a general evolution of the steering oar during the Bronze Age, particularly in the form of the blade (Wedde 2000: 60–62, fig. 7). Earlier depictions from the Cyclades and Crete show a spindle- or leaf-shaped blade, while the Mycenaean blade of LH IIIC was larger and thicker, with a triangular shape. Normally, one steering oar is depicted on the starboard quarter, but rarely there are two (e.g., the ship under sail in the Akrotiri Flotilla Fresco; W617) or even three.



3.4 Early steering oar on an Early Cycladic III sherd. Wedde 2000: Catalogue 416, after Atkinson et al. 1904: pl. V.8c. Courtesy of Michael Wedde.

The earliest certain depiction of a sail in the Mediterranean occurs in Egypt on a Naqada II (Gerzean) pottery vessel dated between 3500 and 3100 BC (Fig. 3.5).⁵ The image depicts a ship bearing a single square sail positioned well forward toward the prow, in clear contrast to the conventional positioning of the sail amidships in Bronze Age iconography and models.⁶ The position of the sail forward of the center of the hull's profile has been interpreted as part of an early evolutionary stage in ship configuration (Casson 1995: 19), but to modern ship designers, the center of the sail area is properly shifted forward if the vessel is to sail into the wind or with the wind direction forward of the beam (Tilley 1999).



3.5 Earliest Mediterranean depiction of a sailing vessel, on a Naqada II (Gerzean) jar, Egypt. © Trustees of the British Museum.



3.6 Steatite seal with a ship and possible steering oar, Siteia district, EM III or MM I. Wedde [2000](#): Catalogue 707, after Xenaki-Sakellariou [1958](#): pl. 18.79a. Courtesy of Michael Wedde.

The sail was probably introduced to Crete via Egypt just before 2000 BC (Broodbank [2000](#): 341–47; Yule [1980](#): 164–66). The earliest certain evidence for the sail in the Aegean comes from a series of Minoan seals from EM III and EM III–MM I contexts (Wedde [2000](#): 331–33; W701–713), showing ships with a single mast amidships, two or three fore- and backstays, and variable numbers of oars. At least one (W707) may show a steering oar ([Fig. 3.6](#)). The high, sweeping stern- and stemposts form the crescent shape characteristic of Cretan vessels through the MBA and into the early phases of the LBA, as is plainly shown in the Akrotiri fresco a half-millennium later.

Until the last phase of the LBA, the square or rectangular sail was stretched between a yard and a fixed boom, and furled by lowering the yard to the boom. This boom-footed rig presented certain limitations (Wachsmann [1998](#): 248–54). With the fixed boom, the ship had limited ability to sail into the wind; when not traveling before the wind, the crew's options narrowed to lying at anchor or taking up oars. Further, the sail could not be taken in, so to reduce sail the crew was forced to remove the sail and raise a smaller one, not a simple matter with an unwieldy cable system. The results of preliminary sailing experiments with a replicated boom-footed square rig do not contradict these assessments (Raban and Sterlitz [2002](#)).

A significant innovation of the Bronze Age was the brailed rig with a loose-footed sail, which replaced the boom-footed rig after 1200 BC. In this new configuration, the boom disappeared altogether, replaced by lines (brails) attached to the foot of the sail and threaded up the sail through brailing rings sewn onto the sail. The sail could now be furled by simply pulling on the brails to raise it up to the yard, saving considerable time, effort, and manpower (Wachsmann 1998: 251) and making the ship more responsive to changing conditions at sea. The transition from boom-footed to brailed rig is clearly illustrated in the Aegean. When rigging is identifiable in images of LH/LM IIIB (thirteenth century BC) or earlier, it is almost invariably of the boom-footed type,⁷ but most LH IIIC examples of the post-1200 BC period employ the new brailed rig (Wachsmann 1998: 251; Wedde 2000: 80–87). Elsewhere, shortly after 1200, the naval battle scene from the north wall of the mortuary temple of Ramesses III at Medinet Habu shows the ships of both Egyptians and Sea Peoples with brailed rigs (Casson 1995: 36–38, fig. 61; Raban 1995). The brailed, loose-footed sail seems not to be an Egyptian or Aegean innovation, however. Some interpret the Sea Peoples' ships as Syro-Canaanite (Wachsmann 1998: 163–98). Earlier depictions of Syro-Canaanite ships may or may not carry brailed rigs. An oft-cited example is a craft of Syro-Canaanite type painted in the tomb of Nebamun at Egyptian Thebes, dating to the reign of the Eighteenth Dynasty pharaoh Amenhotep II in the last quarter of the fifteenth century BC. The rigging has been interpreted as supporting a loose-footed sail (Raban 1995: 355), but the part of the painting where the boom would be positioned is not preserved, and several scholars have reconstructed the ship with a standard boom (Wachsmann 1998: 45–47, figs. 3.6–3.8).

Various features depicted on the decks and hulls were probably detachable furniture reserved for ceremonial occasions. On both larger and smaller ships in the Flotilla Fresco, a prominent framework composed of vertical stanchions and horizontal roofing beams forms an awning-like structure that occupies almost half the length of the hull (see Fig. 2.7). The framework creates several compartments in which numerous robed figures are seated. Because boar's tusk helmets hang from some of the compartments' roofs, along with what may be weapons stacked on top, these figures have been interpreted as representations of soldiers (Warren 1979: 119), though they could be VIPs of another type (Morgan Brown 1978). This structure is limited mainly to the Akrotiri fresco of LM IA and the Miniature Wall Painting at Ayia Irini of slightly later date in LM IB/LH II (W672–76; Wedde 2000: 327–28). At that time, Ayia Irini in the northern Cyclades had strong ties to the southern Cycladic and Minoan worlds. A gold signet

ring found near Tiryns and dated on stylistic grounds to LH II depicts a similar structure, with two passengers seated face to face under the awning (Fig. 3.7).⁸ Several salient points emerge from studies of the awnings. They occur on frescoes in the Cyclades and seals on Crete, in a relatively narrow time horizon in the middle of the second millennium BC, but with the exception of the (surely imported) Tiryns ring, they are not found on the Greek mainland at any time. They appear in pictorial contexts that are strongly ritual or ceremonial in nature – the elaborate ornamentation, fanfare, and deliberately archaizing propulsion at Akrotiri, and intimations of feasting at Ayia Irini. Since such large structures would have proved a hindrance both to sailing and rowing, as well as cargo capacity, it is safe to conclude that these were detachable structures assembled onboard for special events and disassembled afterward. Ships configured with this special furniture may not have been taken very far from shore, if the Akrotiri and Ayia Irini scenes are any indication.

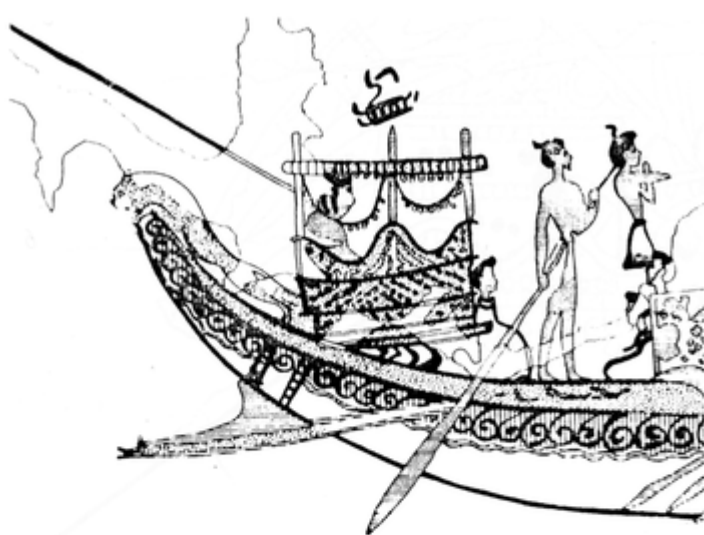


3.7 LH II signet ring showing awning structure, Tiryns. © Hellenic Ministry of Education and Religions, Culture and Athletics/ Archaeological Receipts Fund. Courtesy of the National Archaeological Museum, Athens.

Another kind of deck furniture has greater relevance for the Mycenaean world. An elaborately decorated ship cabin, or *ikrion* (pl. *ikria*), present on the sterns of all of the larger ships in the Flotilla

Fresco procession, was in essence a screen of oxhide or woven fabric on a framework of poles and crossbars, which presumably housed a seat for the ship's captain or some other important official (Shaw 1980, 1982; Wedde 2000: 132–34; Fig. 3.8). The ikrion was unroofed – as clarified by the heads of occupants protruding over the top of the framework – and open on the side facing the bow. Like the awning structure, it was detachable, but it may have been mounted on a permanent platform built onto the stern deck (Shaw 1982: 56, fig. 5). Maria Shaw (1982: 55) characterizes the ikrion as a light, flexible tent-like structure that could easily be disassembled and stored.

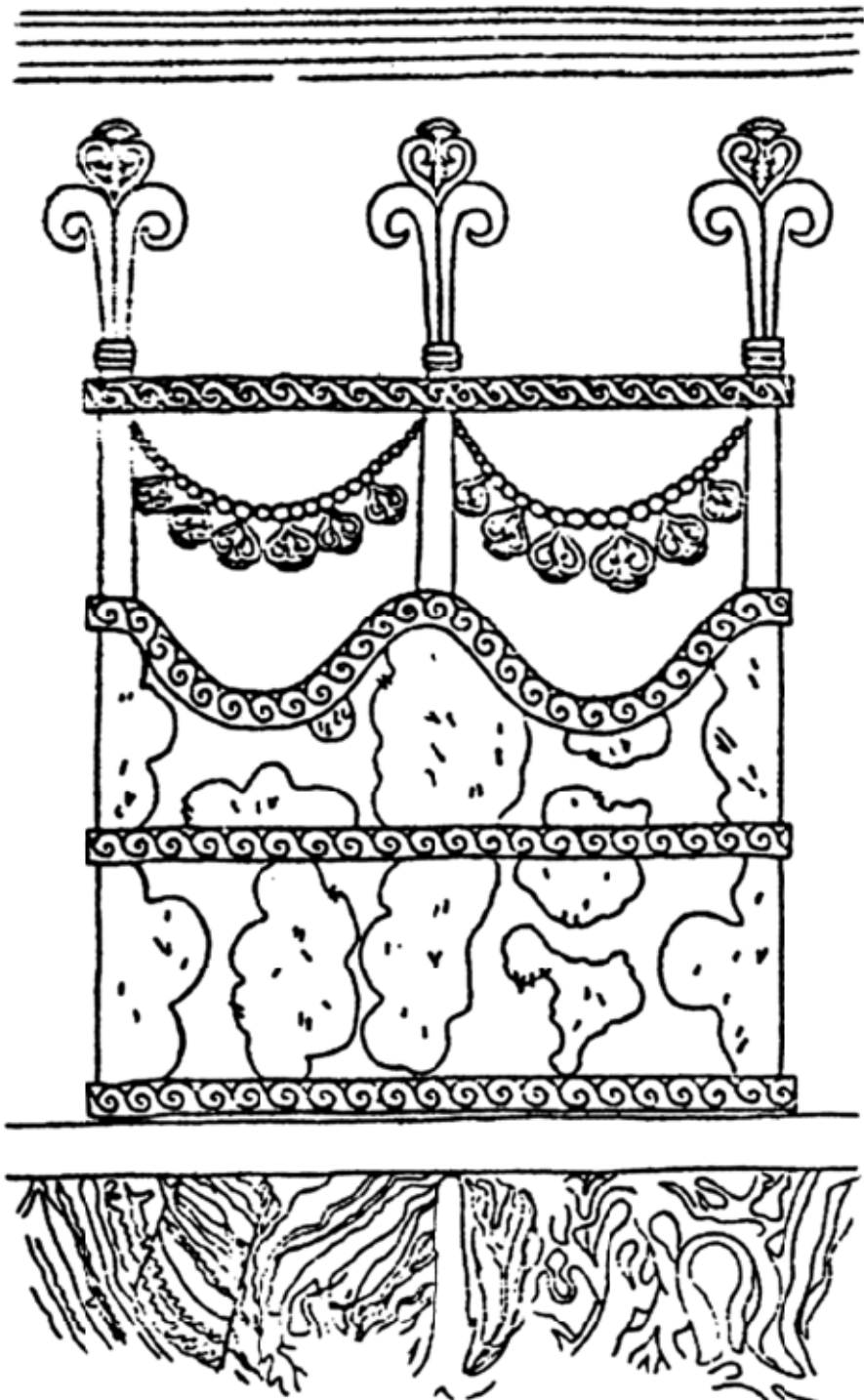
Apart from the Flotilla Fresco, images of ships with ikria are relatively rare and date mainly to LM I/II. They include a seal (W910) of MM IIIB–LM I type possibly found near Thebes, a number of “talismanic” seals predominantly from Crete or of unknown provenience, and a few examples of Linear A sign *86 that may incorporate ikria. The renderings of ship components in these last two categories, highly stylized in the talismanic seals and schematic in the Linear A script, make readings as ikria a matter of interpretation. A stone vase with relief decoration found near Epidauros contains a depiction of a ship with an ikrion in an anomalously late LH IIIB context (W642; Wedde 2000: 324). Like awning structures, ikria appear in ceremonial scenes. They are not depicted on Late Mycenaean galleys shown engaged in naval battle, for example, or on any of the nonceremonial ships in the Akrotiri fresco.



3.8 Ikria from two of the Flotilla Fresco ships, Akrotiri. Wedde [2000](#): Catalogue 614 (top), after Marinatos [1974b](#): 140, fig. 26; and 615 (bottom). Courtesy of Michael Wedde.

Another class of ikrion representations forges a more direct link with the Mycenaean world. The main decoration on the walls of Room 4 of the West House at Akrotiri, adjacent to the room containing the

Flotilla Fresco, was a continuous frieze of eight painted ikria (Wachsmann 1998: 94; Warren 1979: 119; Fig. 3.9). M. Shaw (1980, 1982) has convincingly reconstructed painted stucco fragments excavated in 1886 in a small room just north of the Megaron of the palace at Mycenae as part of a comparable frieze of at least four ikria. The room is interpreted as belonging to a domestic quarter within the palace complex, similar to the inferred function of West House Room 4. The Mycenae ikria, along with additional fresco fragments from the Mycenaean palace at Thebes that may illustrate an ikrion in association with a female wearing a flounced skirt, and the Epidauros relief vessel mentioned above, combine to make a strong case for the survival of this particular emblem through a half-millennium of changing relationships and ship forms. Found in highly elite contexts at Akrotiri, Mycenae, and Thebes, the ikrion can be understood as a symbol of nautical power transmitted among those elites whose power rested partially in the control of sea routes by which access to raw materials and privileged relationships was secured. The recent recognition that fragments of a wall painting from Hall 64 at the Mycenaean palace at Pylos constitute parts of a ship with a brailed rig (Shaw 1980, 2001) highlights the underappreciated role of the nautical realm in the visual language of Mycenaean power.



3.9 Ikrion frieze from West House Room 4, Akrotiri. Shaw [1980](#): 176, ill. 8. Courtesy of Maria C. Shaw and the Archaeological Institute of America.

Types of Mycenaean Seacraft

It is possible to recognize certain distinct types of vessels plying the Aegean in the LBA, and to hypothesize the existence of other types for which we have little or no direct evidence. Two basic functional types that have been projected onto the Bronze Age data are the *merchantman* and the *galley* (Wedde 2001: 609).⁹ The merchantman was a trading vessel designed to maximize cargo capacity. To do so, the space available for rowers and other crew was reduced. With diminished capacity for propulsion by rowing, the merchantman was a true sailing ship that could operate with a minimal crew, but relied on wind power and used oars for limited tasks such as maneuvering within harbor areas. The design of the merchantman hull favored a broader beam, i.e., a larger width to length ratio, to achieve greater capacity and enhanced stability when loaded. Merchantmen were not, however, depicted by Aegean Bronze Age artists, and the true merchantman does not appear in the pictorial record until the late sixth century BC. The date of its initial use will have been somewhat earlier, perhaps as a response to a constellation of novel conditions in the Greek world, including the opening of the Western markets as a result of the colonizing movement, and the naval capacities of the burgeoning poleis that were able to suppress piracy sufficiently for a dedicated cargo ship with few defenses to become viable (Wedde 2002: 845).

Egyptian and Near Eastern representations record a range of forms for merchant ships (Wachsmann 1998: 9–60), but the Uluburun ship is probably typical of the merchant vessels plying the Aegean in the LBA. In view of the ship's apparent westward route and the possibility of two Mycenaean individuals aboard (Pulak 2005), the design of such Syro-Canaanite ships must have been widely known. The Uluburun ship, estimated from hull remains to have been around 15 meters long and 5 meters wide, carried a cargo weighing approximately 20 tons (Pulak 2002: 615). This 1:3 width to length ratio with its substantial storage capacity may be typical of vessels designed primarily for maritime trade in the LBA eastern Mediterranean. The smaller Gelidonya ship, estimated at 9–10 meters in length but uncertain width, has been associated with a “traveling smith, or tinker” because of the tools and scrap metal that formed much of its cargo (Bass 2005b: 51), and must represent another, poorly substantiated, class in the continuum of Bronze Age seacraft.

Neither the ships of Uluburun/Gelidonya type nor the iconographic

Mycenaean galleys fit the functional end members of the round-bottomed trading ship or the oared warship, respectively. Wedde (2001: 610–12) argues for the existence of multifunctional hulls in the Bronze Age, with intermediate or hybrid forms such as the “cargo galley” or “merchant galley” developing near the end of the Bronze Age and in the Iron Age (see also Casson 1995: 65–8, 157–68). There must have been many intermediate designs that constituted distinct solutions to competing desires for increased storage capacity, speed, and ideal propulsion methods (oar or sail). As compromises, these versatile ships could be called upon for speedy transport of warriors and other important persons, time-sensitive messages, or cargo in need of rapid delivery, perhaps including perishable commodities. The Akrotiri fresco illustrates several distinct classes of craft that form a baseline for reconstructing the variety of Mycenaean ships and boats (see below).

The pictorial corpus of Mycenaean seacraft is instead dominated by oared galleys with long, narrow hulls designed to maximize the number of rowers for the purpose of high speed regardless of wind conditions (Wedde 2001: 609). Although the galley carried a mast and sail, it was a less efficient sailing ship than the merchantman with a greatly reduced cargo capacity. Pictorial vases of LH IIIC from Kynos on the coast of East Lokris in central Greece clearly show galleys engaged in naval warfare (Dakoronia 1999, 2002), and the pedigree of Aegean ships involved in warfare or piracy can be traced back at least to MH II with the painted representation on a pithos sherd from Kolonna on Aigina of armed figures aboard a ship with a curved hull (W511; Fig. 3.10), if not earlier (Höckmann 2001). The Mycenaean galley was not strictly a dedicated warship, however, since it is frequently shown without warriors and in contexts that imply ritual and other nonmilitary activities. The true warships of Archaic and Classical Greece were the result of a gradual evolution that began with the Mycenaean galley, with incremental innovations that moved the design toward the single purpose of naval warfare.



3.10 MH II sherd showing armed figures aboard a ship, Kolonna.
Drawing by Felice Ford after Siedentopf [1991](#): pl. 38.162.

Development of the Mycenaean Galley

The oared galley is, practically speaking, the only type of distinctly Mycenaean vessel in the pictorial record. Mycenaean merchantmen may have existed, and small working boats certainly did, but we have no indisputable representations of either. Even the Mycenaean oared galley does not appear iconographically until LH IIIB, before being depicted much more frequently in LH IIIC, leaving a period of several hundred years in Early Mycenaean and early palatial times with almost no evidence of seafaring on the Greek mainland. Because Minoan-style vessels continue to be depicted in small numbers until LM/LH IIIB, it is possible to bridge the gap by assuming that Minoan-style vessels were used by the Mycenaean up to and including a short

period of coexistence in LH IIIB (Wedde 2002: 844–45), but the examples of Minoan-style ships and boats are few on the mainland. A terracotta model from Tanagra (W319) of LH IIIA–B date that shares formal characteristics with Theran and Minoan ship images is perhaps representative of a mainland type influenced by Minoan shipbuilding traditions. Certainly, given the heavy influence of Minoan Crete on the emergence of complex society on the mainland in the Shaft Grave Era, also the time of greatest Minoan maritime expansion in the neopalatial period, such a transfer of technology would be unsurprising. On the other hand, because a Mycenaean figural tradition did not emerge in any medium until mature palatial times, the lacuna may be simply part of the general situation with respect to artistic representation, and not an indication that seafaring was of little importance to Mycenaean polities or that Mycenaean shipbuilders lacked their own distinctive practices.

Here it is appropriate to mention the recent discovery of ships in frescoes from two sites in Messenia that help to bridge the chronological and typological gap between the ships of the Flotilla Fresco and the LH IIIC galley images. These important and as yet unpublished finds, from Pylos (Brecoulaki et al. 2011; Stocker and Davis 2011)¹⁰ and Iklaina (Cosmopoulos 2011),¹¹ may prove to be intermediate types along this evolutionary path, although it is important to remember that artistic representations may not reflect actual shipbuilding traditions. The Pylos “naval fresco” as reconstructed to date shows three ships in fragmentary state (and possibly the steering oar of a fourth?) that are quite varied in their shape and appearance. What is perhaps most striking is that two of the three ships have the strongly crescentic shape of the Minoan/Cycladic tradition, while the profile of the third is flatter and curves only as it rises to the (apparent) sternpost. The hull of the best-preserved ship is brightly painted with a multicolored zigzag pattern, and three oars extend over the side of the ship into the water. At the stern an *ikrion* can be discerned, as well as a large foliate steering oar, with two secondary steering oars, one to port and the other to starboard. Only a small fragment of the second crescentic boat is preserved, but two oars are in the water and a steering oar is visible. The third ship seems to have an awning structure and an *ikrion*. The single fresco fragment from Iklaina shows a portion of a boat with two rowers under an awning structure with their oars in the water. Behind them, the head of a figure is visible behind a curved sheet that must represent an *ikrion* built into the awning structure. The side of the hull is decorated with painted spirals, and two dolphins swim alongside. Like the third ship in the Pylos fresco, the shape of the hull is flatter, with a gentle

curve toward the prow, which is not preserved. Interestingly, the rowers appear to be backing the boat, stern-first, into anchorage.

The early date of the Iklaina fresco fragment, recovered in a reportedly secure LH IIB–IIIA1 context, makes it unique in shedding light on the transmission and adaptation of the Aegean tradition on the mainland. Michael Cosmopoulos identifies both mainland and Minoan features in the fragment, and concludes that it shows a Helladic adaptation of Minoan iconographic motifs. A significant difference between the earlier Minoan/Cycladic tradition and the later LH IIIC representations of the Mycenaean galley is that in the former, rowers are often painted realistically as men, as in the Flotilla Fresco and the Iklaina fragment, with realistic details of the hair, face, arms, and clothing. In LH IIIC rowers are schematic shapes if they are depicted at all; often the oars stand in for the men. No rowers are preserved in the Pylos fresco thus far, but the ships also blend mainland and Minoan/Cycladic features at a much later date in LH IIIB, testifying to the continuing influence of the Minoan iconographic tradition. It is not certain whether these two examples represent a peculiarly Messenian tradition, or one that was more widespread on the mainland but rarely preserved. In any case, these frescoes do not contradict Wedde's conjecture that Minoan-style vessels were used on the mainland in the LBA and coexisted for a time with the newly developing galley in LH IIIB.

According to Wedde (2005: 29), the Mycenaeans invented the oared galley, a radical departure in naval architecture, sometime after 1400 BC. The Mycenaean galley of LH IIIB and IIIC differed in important respects from the Cycladic and Minoan ships that preceded it. Minoan ships, including the seacraft depicted in the Akrotiri Flotilla Fresco, appear to have developed gradually out of the Early Cycladic II longboat tradition illustrated in the ceramic “frying pans,” two lead plaques from Naxos, a sherd from Orchomenos, and a model from Palaikastro (Wedde 2001: 610, 2006: 256 [types II–IV]). Wedde (2005: 30) argues for a single, multifunctional hull type depicted on Minoan seals and the Akrotiri fresco, one equally capable of carrying trade goods, ferrying people on religious processions, or transporting warriors. He considers this a definitively Minoan type of “oared sailing ship” because although they had crews of oarsmen, their design was primarily for sailing. They were versatile in that a small crew could operate them if room was needed for cargo storage, but they also performed efficiently as naval ships.

When representations of Mycenaean galleys appeared rather abruptly in LH IIIB on pictorial pottery, they presented a radically different hull configuration, possibly redesigned from the keel up, rather than the result of a gradual evolution (Wedde 2005: 30–32, 2006: 257–61). The Mycenaean galley loses the crescent shape and sweeping extremities of the Akrotiri ships, replaced instead by vertical stern- and stemposts. The stempost usually rises higher, and is surmounted by a bird or bird head device, in some cases realistic and in others abstract.¹² The fundamental transformation was from Minoan oared sailing vessel to Mycenaean rowed galley. Minoan-style hulls, including the Akrotiri ships stripped of their ceremonial add-ons and with sails restored, sailed efficiently while resorting to oar power mainly when compelled by environmental conditions – dead calm seas, entering or leaving harbors, rounding headlands, or avoiding lee shores. Their general-purpose shape was not optimized for any one task such as rapid movement of troops or other personnel, raiding or defending, or maximum cargo capacity, but they could modify their configuration or propulsion method as the situation demanded (McGrail 2001: 121–22).

The Mycenaean galley moved toward a more purpose-built design. Although equipped with a mast and sail, it featured a long, narrow hull that emphasized oar-driven speed at the expense of wind power and storage capacity. Some basic structural characteristics can be distilled from pictorial representations and models of LH IIIB and IIIC (Wachsmann 1998: 130–53). Along the length of the extended hull, a frequently occurring ladder-like painted design represents an open rowers' gallery with vertical stanchions defining each rower's station (see Fig. 3.3). Oars corresponding to these stations are usually visible against and below the hull, and in rare cases the oarsmen themselves are added. The origin of the penteconter (50-oared galley) in the Mycenaean galley is confirmed by the common occurrence of 25 rowing stations and oars, with slight variations in the number probably the result of artistic license or insufficient space. Thirty-oared galleys (triaconters) are also depicted, and 10- and 20-oared vessels may have been standard types as well.

A logical measure of the contrast in shape between the Minoan all-purpose hull and the later Mycenaean galley ought to be the width to length ratio, but the estimation of this ratio from two-dimensional representations presents many potential errors in both dimensions (Wedde 2000: 101–10). If paddlers, rowers, or oars are depicted, a rough length can be calculated by recourse to the *interscalmum*, or

distance required between rowers or paddlers for them to execute their task. Once the length for this “motor section” is derived, the length of the bow and stern sections can be established as percentages of the depicted length of the motor section. Estimates of width (or beam) are less reliable, since two-dimensional representations provide no information. They are conventionally derived from some combination of the width required to accommodate two rowers or paddlers across, general considerations of hydrodynamic properties and shipbuilding traditions, and Bronze Age boat models.

The difficulties with this approach are easily illustrated by the widely divergent dimensions calculated for the length and beam of one of the large ships in the Akrotiri fresco (Table 3.1). With length and beam varying by as much as a factor of two, these calculations reconstruct vessels of very different size, hull shape, technical performance at sea, and likely function. It is overly optimistic to hope that Bronze Age artists sought to produce drawings at standard scales, and lacking the dimension of width, definitive reconstructions are practically impossible to generate based solely on two-dimensional images (McGrail 2001: 120). The boat models present the third dimension of beam, but are considered unreliable for calculating dimensions of real vessels because of their typically crude execution. Interestingly, however, the beam to length ratio of most models hovers in the range of 1:3. Such a ratio implies a different kind of craft than the large Akrotiri ships, the Early Cycladic longboats (perhaps circa 1:10), or the Mycenaean and later galleys (in the 1:7 or 1:8 range), but roughly matches the ratio of the Uluburun ship. There is reason to believe, therefore, that some boat models represent cargo hulls of the day, though they could equally represent small boats, similar at least in size to those illustrated at Akrotiri. By and large, the models do not seem to depict galleys. TAB

Table 3.1. *Calculated dimensions of a large ship in the Akrotiri Flotilla Fresco (after McGrail 2001: table 4.2)*

Author	Beam	Length	Beam/Length ratio
Gifford	2.6	17.6	1:6.77
Gillmer	3.7	24.0	1:6.49
Toby	2.2	34.0	1:15.45
Giesecke	4.0	35.0	1:8.75

The Mycenaean galley offered certain performance advantages over

the Minoan oared sailing vessel. It was a speedier ship with its long, narrow profile and emphasis on propulsion from the motor section and greater proportional waterline length. Although lighter overall, it seated more rowers. Being lighter, it was easier to draw out of the water onto anchorages lacking offshore mooring. It was less dependent on favorable winds, but in many situations ship captains would have preferred to wait out favorable winds rather than try to row long distances. The steering mechanism was a significant improvement: the Mycenaean triangular steering oar, evolved from its Minoan spindle-shaped counterpart, was a forerunner of the Early Iron Age to Archaic steering oar, with possibly superior hydrodynamic properties.

The drawbacks to the galley design are that it could not easily be operated with a skeleton crew (Wedde 2005: 32); its cargo capacity was reduced – a long, narrow vessel with most room taken up by oarsmen would not have made an efficient trading vessel; it was less efficient at sailing; and crew fatigue on long journeys must have played a greater role.

If the Mycenaean galley was a purpose-built ship, what were the roles for which it was designed? To answer this question, we must begin with the historical circumstances of the Mycenaean period, and consider what need there would have been for a fast seagoing ship with a large, potentially heavily armed crew and relatively little cargo space. This was an era of intensive trade and diplomatic relations among the greater and lesser powers of the eastern Mediterranean. Although the Mycenaeans may have been largely peripheral to the main sphere of interaction to the east, their presence – direct or indirect – is attested by the large quantities of fineware pottery vessels that arrived in Egypt, the Syro-Canaanite coast, and Cyprus in the fourteenth and thirteenth centuries, corresponding to pottery phases LH IIIA and LH IIIB (see Chapter 2). There is reasonable doubt about whether the pottery was carried by Mycenaean ships to all these destinations, and it seems unlikely in any case that the galley would have been an effective means to transport such commodities, except in modest quantities that make little pure economic sense. Perhaps galleys participated in quasi-diplomatic or gift exchange missions, which might result, for example, in the kind of concentration of Mycenaean pottery seen at Tell el-Amarna during the reign of Akhenaten in the mid-fourteenth century.

There is ample evidence, both direct and indirect, that piracy and naval warfare were concerns that contributed to the design of the Mycenaean galley. Already in the middle to late third millennium BC, heavily fortified coastal settlements had appeared on the Aegean islands and the Aegean coastlines of the Greek mainland and western Asia Minor. Weapons, including daggers of copper and bronze as well as sling stones, have been recovered from some of the fortified sites, and the Cycladic longboat has been linked to the implicit hostilities as a raiding ship (Branigan 1999; Doumas 1990). Later in MH II, armed figures are depicted aboard a long-oared vessel on a pithos sherd from Kolonna on Aigina Island (Fig. 3.10). This is fitting, since Kolonna was a sea power surpassed only by Minoan Crete in the MBA Aegean area (see Chapter 7). Mycenae's great period of awakening, the Shaft Grave Era, occurred in MH III–early LH IIA. The frequent martial themes illustrated on artifacts of the Shaft Graves form a striking contrast to previous Aegean imagery, and at least one object, the Silver Siege Rhyton from Shaft Grave IV, depicts a seaborne attack upon a fortified coastal settlement (Fig. 3.11). The narrative scene on the north wall of West House, Room 5 at Akrotiri, contemporary with the Shaft Grave Era in full flower, is interpreted by some as a seaside battle involving both naval warfare and seaborne attacks on a coastal town (Warren 1979: 117–18). Others prefer to see it as a shipwreck scene (Morgan Brown 1978).



3.11 Fragment of the “Silver Siege Rhyton” showing a seaborne assault on a fortified coastal town. Mycenae, Grave Circle A, Shaft Grave IV. National Archaeological Museum 481.

Although ships of the palatial period, LH IIIA–IIIB, are poorly represented iconographically, contemporary texts and archaeological sites record Mycenaean maritime forays to the east. By the late fifteenth century, Mycenaean emigrants were active in southwestern Asia Minor and the islands of the southeastern Aegean, where their settlements succeeded Minoan colonies at Miletos on the Anatolian mainland and at Ialysos on Rhodes. In the Hittite texts from Hattusa, ships of Ahhiyawa (Mycenaeans) are reported in various actions on the sea in the fourteenth and thirteenth centuries (see [Chapter 2](#)). The Mycenaean ships that participated in a naval raid on Cyprus and helped fugitives from Hittite justice escape by sea from Asia Minor

must have been galleys (Bryce 2005; Neimeier 2003). On the other hand, an apparent Hittite embargo designed to prevent Mycenaean ships from reaching the Syrian coast in the late thirteenth century (Cline 1991; Güterbock 1983: 136) may have targeted either military or commercial traffic, including Mycenaean merchant hulls if they did exist.

A small corpus of Linear B tablets from Pylos, dating to the final days of the palace's existence circa 1200 BC, concern the deployment of rowers to man ships around the coastlines of the kingdom (particularly, tablets An 1, An 610, and An 724: Chadwick 1994: 173–79). The close match between the different crew sizes that can be estimated from iconographic representations (with 20, 30, and 50 as units) and the requisition in Pylos tablet An 610 of approximately 600 rowers, a multiple of any of these apparently standard galley types, makes it reasonably certain that the ships in question were galleys, and that the palace was able to control the fleet and the personnel to operate it. The role or mission of the ships listed in these tablets is not known, but the description “Thus the watchers are guarding the coastal region” (PY tablets An 657, 654, 519, 656, 661) has been interpreted, in view of the impending destruction of the palace, as indicating an anxious effort to defend the kingdom against imminent attack from the sea (Chadwick 1994: 173–75). At the very least these recruitments involve naval or military operations rather than trade. On the other hand, the rowers are called up according to their villages of residence using the same system of proportional ratios employed for taxation, with sailors obliged to contribute service in return for land grants (Killen 1983). It is thus possible that the recruitment of rowers in Pylos tablets An 1, An 610, and An 724 represents a regular, annual activity and not a desperate measure taken at a time of extreme danger (Palaima 1991: 285–86). Most normal palatial activities continued to the very end, including craft and industrial activities, sacrifices and feasting, and the routine oversight and documentation of many aspects of the agricultural economy (Shelmerdine 2001: 351–62).

Representations of Mycenaean galleys increase dramatically in LH IIIC, ironically perhaps because of the collapse of the palaces. It is at that time that we first see the galley depicted explicitly in scenes of naval warfare, on pictorial pottery from Kynos in East Lokris (Dakoronia 1999, 2002, 2006; Fig. 3.12). The Kynos ships in particular have been compared with the roughly contemporary depictions of Sea Peoples' ships at Medinet Habu, and the similarities

have been cited as evidence of a significant Aegean component among the Sea Peoples (Wachsmann 1997, 1998: 171–72). This close relationship has been disputed, however. Seán McGrail (2001: 125) finds closer parallels for the Sea Peoples' vessels with Levantine ships, while Vassilis Petrakis (2004: 3–4) characterizes similarities such as the bird-head device as imprecise, emphasizing instead the differences in bow and stern morphology to suggest that the vessels may be of an entirely different type. Thus, ship iconography lends little weight to the assertion, better left to other forms of evidence, that Aegean refugees formed part of the movements of the Sea Peoples and participated in their raids.



3.12 Kynos A galley with decked hull, LH IIIC Middle. Wedde 2000: Catalogue 6003, after Dakoronia 1990: 122, fig. 2. Courtesy of Michael Wedde.

It is worth asking whether the galleys and warriors engaged in combat on the Kynos vessels are meant to show pitched sea battles between the navies of two polities, or instead the predatory actions of pirates. Piracy, in the form of quick-strike raids on coastal towns, was probably a fixture of Aegean existence at least since EH II, when fortified coastal settlements became widespread. It has been remarked that there is a fine line between trading and raiding, and the same can

be said for the distinction between piracy – “informal warfare” – and interpolity warfare on the seas. The Near Eastern and Egyptian documents of the LBA are replete with references to coastal raids by a variety of agents, orchestrated both by recognizable political entities (such as Ahhiyawa) and shadowy, stateless groups such as the Sea Peoples. From the perspective of modern world history, quick-strike guerilla campaigns and terrorist actions of elusive, nonstate groups pose particular problems for large states, because traditional diplomatic and military solutions tend to be ineffective. It is easy to comprehend why piracy, a form of guerilla warfare by sea, was of such concern to eastern Mediterranean states of the Bronze Age that preferred to settle their differences through diplomatic channels or traditional land battles. They were not easily able to respond in a timely or effective manner to piratical attacks, as is abundantly clear in the Hittites’ protracted troubles at the hands of the renegade actor Piyamaradu, or Ugaritic texts from the Ras Shamra archive containing desperate communications from the king of Ugarit to his counterpart in Alashiya (Cyprus) regarding devastating coastal raids perpetrated by unnamed enemies:

My father, behold, the enemy's ships came
(here); my cities (?) were burned, and they
did evil things in my country. Does not my
father know that all my troops and chariots (?)
are in the Hittite country, and all my ships
are in the land of Lycia?...Thus, the country
is abandoned to itself. May my father know it:
the seven ships of the enemy that came here inflicted much
damage upon us.

(RS 20.238, transl. M. Astour [1965: 255])

The responses of states to piracy could include organized and aggressive pur-suit – the systematic sweeping of pirates from the seas attributed by Thucydides to the Minoans, or the historically attested Roman efforts to extinguish piracy in the Mediterranean during the *pax Romana* – and/or enhanced defensive capabilities. Defensive strategies might involve fortified harbors, coastal installations such as watchtowers for monitoring the sea and sending fire signals, placement of major settlements some distance inland, strategic deployment of naval fleets, and improved intelligence operations.

Historical texts of the post-Bronze Age period portray piracy as not

only ubiquitous, but in certain contexts a not dishonorable profession. Thucydides (1.4) famously attributed to King Minos of Crete the organization of the first navy in the Hellenic world, with which he extended his rule over the Aegean and eliminated piracy therein. This passage is fundamental to the highly controversial notion of a Minoan thalassocracy in the Middle and early Late Bronze Age, but it also reflects increasingly negative attitudes toward piracy in the Classical period, a time in which unfettered trade and communication by sea were vital to highly developed state societies. At an earlier time reflected in the Homeric epics, however, the piratical life was imbued with much greater ambiguity. The practices of piracy and warfare, as well as those who practiced them, were poorly differentiated; both (as we would distinguish them) were aspects of the violent life of a seagoing warrior (de Souza 2000: 16–19).¹³ In the *Odyssey*, pirates can be viewed with suspicion as “reckless wanderers of the sea...who risk their lives to prey on other men” (3.71–74; also 9.252–55), but the acquisition of booty through plunder is also an honorable means to achieve high status. Odysseus’ false tale of a Cretan upbringing (14.191–265) includes episodes of plunder that bring him wealth and respect, and in this passage it is particularly difficult to distinguish warfare from piracy. Ultimately, however, Odysseus’ Cretan adventurer is taken prisoner in a botched raid on Egyptian shores. Two further stories in Book 9 find Odysseus’ ships raiding coastal settlements on their return from the Trojan War, with similar results. Upon their departure from Troy, the convoy was blown northwest to the Aegean coast of Thrace, where they attacked Ismaros, a town of the Ciconian Thracians (9.39–61). After killing the men and carrying off their wives, livestock, and other wealth, Odysseus’ men lingered, feasting in spite of Odysseus’ entreaties to return to the ships. The surviving Cicones rallied local forces and routed the attackers, killing many and driving the rest to the sea. Later, it was Odysseus himself who foolishly insisted on staying on to explore the island of the Cyclopes, with the result that many of his men lost their lives in Polyphemus’ cave (9.172–402). Almost comically, each of these stories ends in disaster because in their lust for booty, Odysseus and his men ignore the cardinal rule of piracy: strike quickly and get out fast. The piratical way of life is revealed as dangerous, but this level of ineptitude suggests that the Trojan War heroes turned to plundering coastal towns out of need, not by choice, and with little experience of the art.

The galley, whether in Mycenaean or later Homeric form, was the ideal pirate ship: light enough to be beached, optimized for speed with its powerful motor section and capable of rapid strike and retreat

regardless of wind conditions, battle-ready with a large number of oarsmen doubling as warriors, and endowed with sufficient storage space for modest quantities of plunder to be distributed among the convoy. The typical pattern of piratical raids, whether described in LBA diplomatic letters or Homeric epics, is that when they are executed in quick-strike fashion, few towns or even empires are able to respond quickly enough to prevent attackers from escaping with their loot (Bradford 2007: 4–5).

Although the Mycenaean galley began a movement away from the all-purpose design, it nevertheless assumed a variety of roles, some of them similar to those inferred for Cycladic longboats of a millennium earlier: raiding, trading of low-bulk cargo, and elite voyaging (Broodbank 2000: 100). To these we might add rapid transport of personnel and messages, defensive deployment against pirates and enemy navies, and ultimately pitched naval battles like the ones depicted on the Kynos sherds. The apparent shift toward more frequent use in warlike situations is not surprising in light of textual and pictorial evidence from the eastern Mediterranean recording naval warfare as a relatively common aspect of LBA interrelations.

Social and Historical Impact of the Galley

Iconographic representations of the Mycenaean galley are virtually absent until the mature palatial phase of LH IIIB, but since the Mycenaean world had experienced tremendous growth economically and politically by LH IIIA2 – including the emergence of palaces at Mycenae, Tiryns, Thebes, and Pylos – there is reason to believe that the galley was part of this transformation. One motivation for the galley design may have been to extend the range of maritime forays in search of raw materials and trade contacts. The rapid development of the galley could be explained in terms of a feedback loop between a dramatic increase in overseas interaction in LH IIIA2–IIIB1 on the one hand, and innovations in technology on the other (Wedde 2005: 29). As social and economic conditions gave impetus to technological development, the enhanced galley in turn expanded the Mycenaean world. That these circumstances may not have resulted in the development of the merchantman, as would seem logical from an economic perspective, must indicate the high priority for a ship able to defend itself and make headway under widely varying wind and current conditions.

The fact that so much of the pictorial evidence comes from LH IIIC

is a striking detail that has received insufficient attention. Why the concentration of galley iconography in the postpalatial period, when it might have been expected to peak instead in LH IIIA2–IIIB1, the heyday of Mycenaean overseas contacts and international trade? Was it merely the sluggish development of a palatial pictorial/figural tradition that delayed the depiction of prominent objects already well established in daily life, or was there something particular about the relationship between the palaces and the seagoing fleets that made such illustration inappropriate?

In pursuit of answers to these questions, it is interesting to speculate on the role of the galleys in the final, turbulent years of the Mycenaean palace system in LH IIIB2. They may have had a dual, paradoxical effect: prolonging the life of declining palace centers by securing lifelines to sources of supply, while at the same time fostering the rise of maritime communities that may have contributed to the downfall of palaces if alternative power centers materialized at coastal nodes in the periphery of the palaces. The latter possibility refers to Wedde's (2005: 33–6) suggestion that a “galley subculture” emerged where galleys were built and beached, and where captains and crews lived, because galley rowing led to the formation of teams commanded by a captain and a helmsman. These became embryonic power centers. So long as the palaces were able to maintain loyalty and order by distributing benefits to key individuals and groups within the kingdom, they could manage maritime activities and the crews that carried them out. But severe disturbances beginning in the mid-thirteenth century seem to have been accompanied by disruptions in long-distance trade. Whether or not these disruptions were at least in part external and systemic to the eastern Mediterranean in general, any breakdown in the flow of goods and services to and from the palaces had the potential to strain or sever the relationships that buttressed palatial power. If nascent maritime communities existed, they may have transformed themselves from agents working in the palatial interest to dangerous male populations capable of using their specialized knowledge and access to distant sources of supply to create alternative centers of power. Closed maritime communities are known throughout history in all areas of the world; at times, they become alternative quasi-societies with their own distinctive ideologies, practices, and social structures (Adams 2001: 304–306; Muckelroy 1978: 221–5, 240–42).

The implication of this argument is that in Messenia, these groups may have helped to bring down the palace. Wedde points to rowers’

coastal towns mentioned in the Pylos tablets as possible bases, but if so they were short lived: after 1200 Messenia was nearly depopulated, so no putative coastal power centers survived the palatial collapse, casting doubt on Wedde's scenario for Messenia or any other palatial territory. The palace was clearly involved in building (Vn 46, Vn 879) and staffing (An 610, An 724) ships. The fact that the Pylos tablets belong to a period of no more than one year, and perhaps even less, prior to the final destruction and abandonment of the site implies that the palace was able to summon military personnel up to the very end, unless we propose that the rowers never reported, or that the absent rowers in An 724 were defectors. In the final days, much of the normal business of the palace continued, all recorded routinely and meticulously by palace scribes.

An alternative interpretation of the tablets concerning rowers is that they were requisitioned by the palace as part of an organized exodus of the elite in the face of impending disaster (Wachsmann 1999). The archaeological record at Pylos is plausibly read as a deliberate abandonment in which people, livestock, and valuables were removed and replaceable items such as pottery were left behind (Wachsmann 1999: 496–98). Refugees from Pylos and other Mycenaean centers fled to the east, where some settled in Cyprus and later migrants founded the Philistine cities of the southern Levant; to remote interior locations such as Arcadia; or to Greece's coasts at places like Lefkandi, Perati, and Kynos, from which maritime connections with the world beyond the Aegean would be continued or resumed. In this scenario, the galley teams become saviors who evacuated the elites instead of rivals intent on bringing the palaces down.

We now know that maritime commerce did not simply wither away after 1200 BC, but was reconfigured in the wake of dramatic social and economic transformations in the eastern Mediterranean. Many prosperous centers of LH IIIC were coastal, contradicting the once commonly held notion that Aegean communities abandoned coastal sites in fear of marauding Sea Peoples, turned their backs on overseas connections, and eked out a pastoral “Dark Age” existence. The unambiguous pictorial representation of galleys engaged in sea battles on the Kynos sherds, and the general spike in illustration of Mycenaean galleys on pottery of LH IIIC, give evidence that fleets of galleys played an important military role in postpalatial times, both to protect communities and their assets, and to serve as offensive weapons to carry out swift seaborne raids. The capability to build fleets of galleys and organize defense and overseas trade implies that

some form of hierarchical society with sufficient organizational infrastructure persisted in LH IIIC. It even seems possible that galleys were one element of a revived – or preserved – elite culture, along with feasting, hunting, chariot riding, seafaring, and warfare on land and sea, which found expression on pictorial *kraters* in the Euboean Gulf area in LH IIIC Middle (Crielaard 2006: 282). Perhaps the galley warriors depicted on the Kynos sherds, and the shipbuilders and ship captains they imply, are examples of Wedde's "galley subculture," elevated to a new level of prominence in the economic and social conditions of LH IIIC Greece, and the ancestors of Odysseus and Homer's other seafaring heroes (Wedde 2005: 36).

Returning to the original observation of concentrated depictions of galleys in LH IIIC, none of the hypotheses just cited addresses why the palaces did not invest more liberally in ship representations as expressions of their power and reach,¹⁴ but in postpalatial times such images may have been fitting expressions for newly empowered groups focused strongly on the sea. Most of the great palace centers – Mycenae, Thebes, Pylos, Knossos – were situated inland and drew the bulk of their resources and power from fertile agropastoral hinterlands.¹⁵ In the postpalatial era, smaller-scale polities lacked the means to control vast territories, and so may have preferred to organize into "small worlds" of settlements occupying good anchorages with modest agricultural hinterlands, relying on one another for protection and more generally for social and economic viability. Galleys and other types of seagoing craft, commanded by sea captains who now perhaps wielded the power of basileis as they do in the *Odyssey*, forged the essential links that bound these reconfigured "maritime cultural landscapes" (Westerdahl 1992). It is conceivably for these reasons that galleys became a popular subject for pictorial pottery.

Small Boats

To put it plainly, we know virtually nothing of the range of small boats the Mycenaeans used. There are no physical remains, no pictorial representations, and no textual references. This poses a problem for a central claim of the present study, that short-distance contacts constituted the main maritime interactive spheres of Mycenaean small worlds, since boats of various forms and functions should have been the workhorses that maintained these close connections. Are these craft, therefore, irrevocably lost to us? The answer is not quite, although we are left to speculate on the basis of

mostly indirect evidence. The relevant classes of evidence we do possess are (1) contemporary or near-contemporary pictorial representations, such as Egyptian tomb paintings, seal engravings, and the Flotilla Fresco at Akrotiri; (2) Bronze Age boat models that may or may not represent small boats; (3) worldwide ethnographic data on “traditional” boat building and use at sea; and (4) experiments in building and navigating replicas of ancient ships derived from analysis of sources 1–3 above.¹⁶ One factor that tends to legitimize comparison with contemporary and near-contemporary non-Aegean, as well as worldwide ethnographic, specimens is the long-term conservatism so frequently observed in form and function of small craft. Consider that the large ships of antiquity, from galleys and merchantmen to the great naval and grain ships of the Roman Empire, have all long since disappeared from use as obsolete – it would be absurd to contemplate building such craft today except for historical interest. These ships are technology driven and frequent modifications are part of a competitive process for greater cargo capacity, more speed or superior sailing capabilities, or better defensive or offensive characteristics. By contrast, small boats similar in many respects to those depicted in the Akrotiri fresco and in Egyptian tomb paintings and models are still to be found in scattered parts of the world. This is so because throughout time they have facilitated the fulfillment of local (or “microregional”) subsistence and social needs among societies under conditions that necessitate the use of low-cost, readily available materials with minimal technology including simple tools such as adzes, saws, and bowdrills of metal or stone. This has given rise to innumerable local traditions and endless variations of boat form, “conditioned by the geography of the local waters, climate, purposes for which the boat was needed, availability of materials for their construction, tradition of craftsmanship which grew up among the boatbuilders and the general state and nature of the culture of the people building them” (Greenhill and Morrison 1995: 20). Nevertheless, it comes as little surprise that a Middle Kingdom Egyptian papyrus skiff (Jones 1995: fig. 26), an Early Cycladic model canoe of hammered lead (W105), a canoe appearing in the Flotilla Fresco, and a modern dugout canoe of the Caroline (Gladwin 1970) or Solomon (Feinberg 1988) islands of the Pacific should have such similar forms as a result of comparable basic materials – including the physical properties and behavior of wood – and uses. In fact, a “papyrus” skiff (*papyrella*) remained in use on Kerkyra (Corfu) in Greece into the 1980s for local fishing and lobster trapping. (Tzalas 1995b reports that despite the colloquial term *papyrus*, the plant is actually *Ferula communis* L., the giant fennel.) Harry Tzalas remarks on the close resemblance of a reconstructed *papyrella*, built by a local craftsman with no knowledge

of ancient boats, to the Bronze Age Egyptian skiff, attributing this to the limitations of the long-stemmed plants themselves, commenting “...it would have been difficult, if not impossible, to obtain a different form” (Tzalas 1995b: 446). Small-scale coastal and island societies with modest access to raw materials, manpower, and technology always require simple water transport for fishing and other subsistence activities, as well as transport within the small worlds that are defined by their social and economic networks. The basic needs of Mycenaean coastal communities were no different; thus it is reasonable to proceed with an examination of the forms of evidence enumerated above.

At the outset, we might propose a series of boat types, and identify the range of functions they may have served in LBA coastal settings (Table 3.2). If a coastal community hosted a harbor that admitted large galleys and trading ships, certain classes of small boats facilitating access in and out of the harbor would be required, especially if the water was shallow or underwater hazards necessitated the approach of larger vessels via specific channels. This kind of boat, which we might refer to as a pilot or guide, has been recognized in the small canoe (W622) being rowed out to meet the ceremonial ships at the Arrival Town in the Flotilla Fresco; three identical canoes are beached on the shore. Another type of harbor vessel would assist in loading and unloading cargoes where ships could not approach closely to shore. The ideal form for these boats would combine storage capacity with shallow draft – most likely a smallish craft propelled by oars and maximizing beam while minimizing draft within the constraints of local conditions. Because of the often windy and turbulent conditions of Aegean coastlines, large, flat barges like those plying the Nile in the Bronze Age would not have been feasible.

Table 3.2. Hypothetical Late Bronze Age small boat types and functions

Vessel type	Propulsion	Range	Functions
Pilot/guide	Rowed or paddled	Local/harbor	Guide incoming ships into harbor channels and away from hazards; to mooring near shore or on offshore islands

Barge	Poled or paddled	Local/harbor	Load and offload cargo
Canoe: dugout; papyrus or reed	Paddled	Local	Fishing, local travel
Rowboat	Rowed	Local/regional	Fishing, local and regional trade and social communication
Coasting vessel	Rowed or sailed	Local/regional	Regional trade and social communication

Vessels specifically dedicated to subsistence needs would include boats for fishing and trapping in coastal waters and wetlands. The empirical evidence for fishing in the prehistoric Aegean is not overwhelming (Powell 1996). Judith Powell assembled the evidence from faunal remains, fishing equipment, and iconographic representation available in the mid-1990s. It is safe to say that few of the earlier archaeological investigations surveyed by Powell routinely sieved, let alone floated, archaeological deposits to recover botanical and other tiny to microscopic remains. In recent years, however, sieving and flotation have become standard practices of most Aegean projects, with the result that among the small finds recovered by this process are fish bones, fishhooks, and sinkers. As these data are incorporated into archaeological knowledge of Aegean prehistory, a more balanced assessment of the contribution of fishing to local subsistence will be possible. To cite the example of one site central to our discussion, Kynos has produced substantial numbers of fish bones, fishhooks, lead weights (for nets), and shells from edible and inedible shellfish (Dakoronia 2002: 287).

It is important to consider the range of different methods and settings for fishing, broadly defined. One meaningful way to differentiate fishing activities and their requirements is by setting (Table 3.3). Although it is difficult to avoid a measure of arbitrariness (e.g., the five-kilometer boundary between inshore and offshore fishing is arbitrary and will vary with local conditions) or to imagine that each of these categories correlates with different equipment, practices, or targeted resources, they do prompt us to contemplate fishing more broadly in terms of the comparative difficulty of exploiting different species, the methods of fishing and the required technology including boats, and the risks and rewards as one ventures further from shore.

Table 3.3. Range of fishing practices defined by setting (after Pickard and Bonsall 2004: 274)

Type of fishing	Setting
Land-based fishing	All fishing practices that can be conducted from land, without the use of watercraft
Inshore fishing	Fishing activities conducted using watercraft up to 5 km from shore
Offshore fishing	Fishing conducted more than 5 km from shore
Open-sea fishing	Fishing conducted out of sight of land
Deep-sea fishing	Offshore or open-sea fishing in deep waters

There are many methods of land-based fishing that do not require watercraft, focused in the shallow waters just offshore or in coastal wetlands.¹⁷ Among these are casting a fishing line from shore; fishing with hooks or spears while wading or swimming; diving for shellfish or sponges; setting traps for fish, lobsters, octopi, and other marine life in shallow wading water; and collecting crustaceans on sandy beaches (Powell 1996: 82–138; for ethnographic examples of fishing strategies, see Feinberg 1988: 22–24, 124–32; Gladwin 1970: 27–32). Wetlands provide another set of land-based activities that may involve fishing, fowling, and collecting shelled animals and amphibians.

At a distance from shore, fishing from boats can involve many of the same basic techniques – diving, spearing, fishing with nets or with hook and line – adapted to the prevailing conditions at sea. These techniques are equally practicable from dugout canoes or plank-built rowboats, though modifications such as outriggers attached to dugout canoes may be specialized adaptations for fishing or other tasks (Feinberg 1988: 51–59). Ethnographic research on island societies suggests that few engaged regularly in offshore or open-sea fishing, except under conditions of scarce terrestrial resources (Pickard and Bonsall 2004: 276); nevertheless, open-sea and deep-sea fishing are not unknown (Feinberg 1988: 23). Bones of bluefin tuna are present in Upper Mesolithic levels at Franchthi Cave on the Greek mainland, approximately 9000–8000 BP. The remains of these pelagic fish suggested deep-sea fishing already at that time (Rose 1995; Runnels 2001: 247–48), but recent assessments are more skeptical, pointing

out the small quantities of the bones and the possibility that tuna could be caught by nets as they enter inshore waters to feed (Perlès 2003; Pickard and Bonsall 2004: 283).

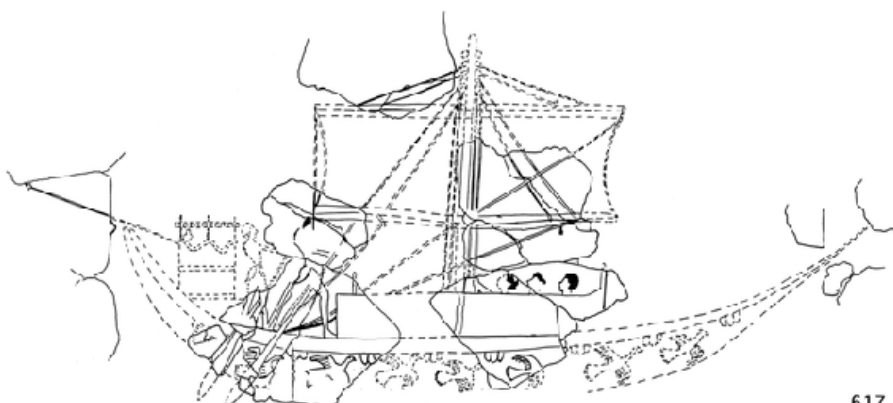
No Linear B texts are known to refer to fish or fishermen (Palaima 1991: 284), probably meaning that fishing was not controlled directly by the palaces and thus was not part of scribal recording systems. Like clay, fish and other marine resources were ubiquitous and it was not feasible for the palace to control access to this basic subsistence resource in coastal areas. This is not to say that the palaces took no interest in products of the sea: the palace may have had several sources of indirect supply from which to choose, as was apparently the case with pottery at Pylos (Tartaron 2008: 105–106). It merely means that the palaces did not attempt to monopolize marine resources or control their movement through the kingdom, as the Pylian palatial elite did with precious metals and the Knossian palace did with sheep. Silence in texts should not be taken to mean that marine resources were little exploited, since in the historical period a comparable paucity of references to fisherman and their products reflects their low social status in spite of ample evidence that fish were eaten and generally appreciated. The frescoes of young fisherman at Akrotiri and the frequent depiction of fish and sea life on pottery (particularly in Minoan Crete) suggest their importance. During postpalatial times, fisherman working communally to trap fish with nets were depicted on painted pottery at Kynos and Aplomata (Yasur-Landau 2010: 91–92, figs. 3.38, 3.39). On the other hand, to date stable isotope analysis of skeletons has failed to demonstrate a significant contribution of marine protein to the diet of Bronze Age individuals, even at coastal sites (Petroutsas and Manolis 2010; Triantaphyllou et al. 2008). The extent to which this result is a methodological issue of measurement remains a matter of debate (Hedges 2004), so it is not yet safe to conclude that Bronze Age coastal dwellers eschewed marine dietary resources. It will be interesting to see whether flotation of archaeological deposits in the future supports the isotopic finding of near absence of marine products in the diet.

Another type of craft plying local and regional waters would fall under the broad rubric of *coasting vessel*. The coasting vessel, or coaster, has the primary function of “sailing along or near a coast, or running between ports along a coast,” typically engaged in coasting trade “carried on by water between neighboring ports of the same country, as distinguished from foreign trade or trade involving long voyages” (Webster 1913). This functional definition offers little help

in imagining what such vessels would have looked like in the Aegean Bronze Age, but we might expect certain characteristics, notably shallow-hulled ships and boats that can negotiate reefs and other hazards where deeper-hulled seagoing ships cannot. Their construction could be less heavy and robust than that of ships built to withstand long voyages on the open sea, the latter perhaps best exemplified by the Uluburun wreck. Perhaps we can recognize a coasting vessel in the modest dimensions of a craft at Akrotiri (W612; [Fig. 3.13](#)), rowed out of the harbor of the Departure Town with five rowers under a (temporary?) framework, a helmsman operating a single steering oar, and a seated figure behind him at the stern. Other fragmentary boats appearing in the Flotilla Fresco (W632, 633) may be of the same class, and we might even include the lone boat under sail (W617), once the ceremonial embellishments (ikrion [?], framework, hull decoration) were removed ([Fig. 3.14](#)). Coasting boats of this scale, propelled by oar and sail, are central to the notion of maritime small worlds because they played the primary role in creating and maintaining the networks that constituted them.



3.13 Ship rowed from “Departure Town,” Flotilla Fresco, Akrotiri. Wedde [2000](#): Catalogue 612. Courtesy of Michael Wedde.



3.14 Ship under sail, Flotilla Fresco, Akrotiri. Wedde [2000](#): Catalogue

With these hypothetical statements about the form and function of boats operating in Mycenaean small coastal worlds, we may continue with a closer examination of the lines of evidence proposed above.

Egyptian Boats

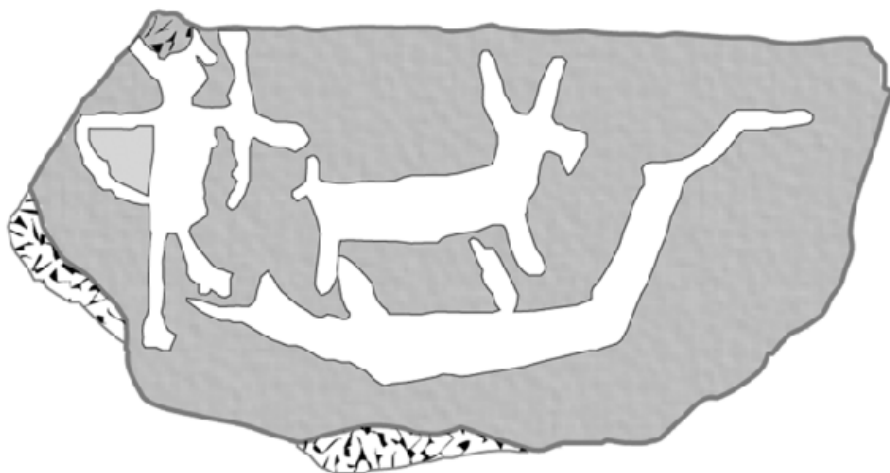
A broad range of depictions of ships and boats has survived from Bronze Age Egypt, the result of a rich visual culture, excellent preservation even of organic material, and the fundamental place of water travel in everyday life as well as in the deeply symbolic and religious structures of the Egyptian worldview. These representations consist of tomb paintings, temple reliefs, boat models mainly from tombs, and remains of actual full-scale boats. Boat models were crafted in wood, ivory, clay, and metals including gold and silver. The vast majority of the surviving examples are of wood, hinting at an entire class of models that may have existed in the Aegean, but that will have disappeared in poor preservation conditions.

The boats found in Egyptian tombs served a range of essential functions for the deceased: utilitarian vessels provided for traveling, carrying loads, hunting and fishing, and pleasure cruising; funerary boats conveyed the mummy across the Nile for burial and on journeys to Abydos and other sacred sites; and magical boats carried pharaohs on eternal journeys to cross the sky by day and the underworld by night (Jones 1995: 27). One of the principal types of utilitarian watercraft, the use of which spans the entire Bronze Age from the Old to the New Kingdom, was a skiff built from bundles of bound papyrus plants. These utilitarian craft were used locally to carry light loads and for fishing and fowling in wetlands (Jones 1995: 36). The papyrella used until recently on Corfu, mentioned above, has a form similar to the Egyptian skiff, a result of the comparable working properties of the papyrus and giant fennel, and was used in a comparable range of settings and for similar tasks. The simple construction of these canoes, made by lashing together bundles of cut stalks with vegetable fibers or leather strips, fulfilled the requirements of low cost and low technology for families with few resources for elaborate and expensive watercraft.

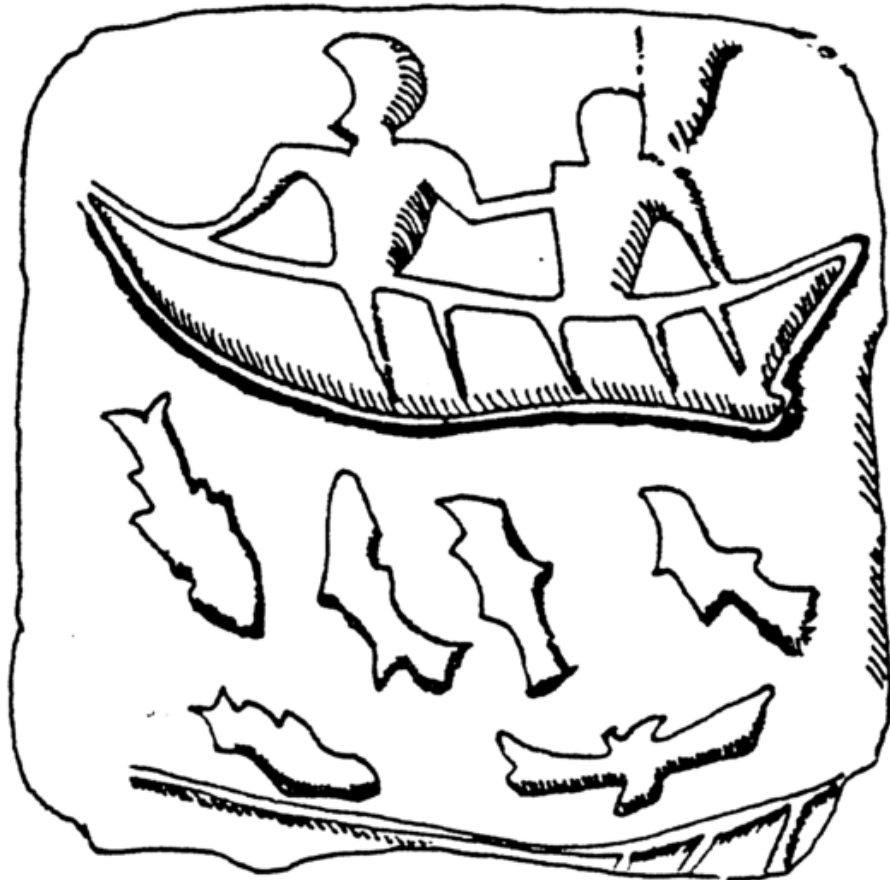
Iconographic Images of Small Boats

Apart from the four small skiffs or canoes (W622–25) from the Flotilla Fresco, there are few other Bronze Age images that can be interpreted unambiguously as realistic representations of small boats. There is a large corpus of seals and a few sealings and gold signet rings (W701–981; Wedde 2000: 331–49), almost exclusively from Crete and ranging in date from EM III to LM III with a peak in MM III–LM I, which depict boats or ships of various kinds in “cultic” or “ritual” scenes. Within this corpus several subcorpora can be distilled. One such group (W901–912; Wedde 2000: fig. 18) features anthropomorphic figures of deities or worshippers in boats along with other standard elements of Minoan cult scenes, including trees (W904) and tall structures surmounted by horns of consecration (W908). Another group comprises the so-called talismanic seals, characterized by the use of a tubular drill and broad cutting stone to create heavy geometric elements, resulting in highly abstracted motifs (Onassoglu 1985; Wedde 2000: 134–41, figs. 12–14). When ships or boats appear on talismanic seals, typically only the bow and a portion of the length of the hull are shown, along with a bird device on the bow and a highly stylized ikrion, outlined by net and lunette patterns, rising from the hull (Wedde 2000: figs. 12–14). The trouble with identifying these images of watercraft as small boats is that their dimensions often cannot be estimated on human scale if no figures are depicted, and for many we cannot rule out that the artist sought to illustrate fantastical or magical craft rather than boats faithful to real-life examples. Thus, the cultic group (W901–912) depicts craft carrying an individual or a small group of figures suggesting a small boat, but with the figures themselves often appearing at distinctly different scales, it is difficult to infer how large a vessel the artist imagined, if that was even an important detail at all. Consider another example, an Early Cycladic graffito cut into white marble from Korphi t’Aroniou on Naxos (W413; Fig. 3.15). This pictograph presents a narrative scene of a flat-hulled boat with a prominent rising bow, onto which a quadruped (goat?), more than half as long as the boat itself, has been loaded while a human holding implements in each hand steps onto a spur at the stern. Perhaps the intended narrative is the short-distance transport of an animal or two to grazing lands or for trading with another coastal community, but I find it equally compelling to understand this graffito as a kind of shorthand depiction of a much bigger event, such as the departure scene of an early colonizing expedition in which these figures stand in for many animals and people setting out in larger ships – for example, from the Cyclades to Ayia Photia on Crete in the EBA. In rare instances, we can be more certain that the artist intended to illustrate a small boat. A green steatite seal, found in a MM I context at the palace at Malia (W808), depicts two men occupying

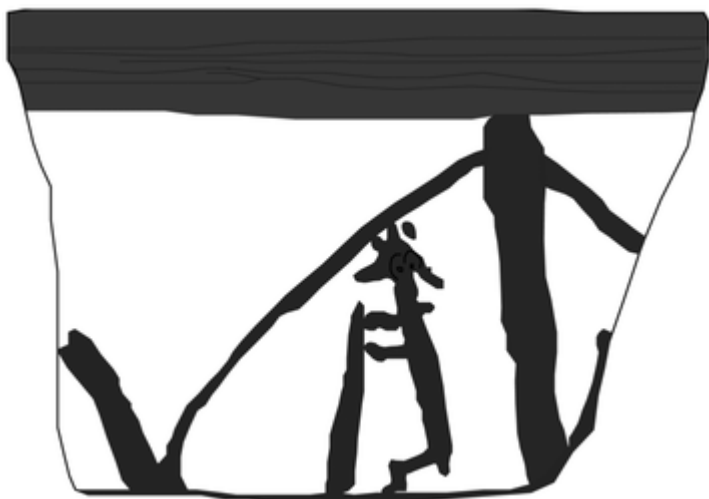
most of the space in a flat-hulled boat lacking a mast or other rigging, with five parallel, subvertical appendages to the hull that probably represent oars ([Fig. 3.16](#)). Below the boat, six fish swim randomly about. The iconographic elements and the minimal rendering of this scene suggest a simple fisherman's rowboat at work. Other cases are more ambiguous. For example, the lip of a Mycenaean LH IIIC pictorial krater recently excavated at Kynos preserves portions of the mast, forestay, backstay, and the extremity of either the stern or the bow of a sailing vessel (Dakoronia [2002](#): 286–87; [Fig. 3.17](#)). No sail is visible, but a single standing figure operates an oar, indicating the possibility of a harbor scene. Fanouria Dakoronia ([2002](#): 287) reads the vessel as a fishing boat, pointing to similarities with the ship depicted on the LH IIIC stirrup jar from Skyros (W655), to which she ascribes a similar function ([Fig. 3.18](#)). Others have not generally taken the Skyros vessel as a fishing craft, however, and this once again underscores problems of confidence in the recognition of small boats.



3.15 Incised image of a boat with human and animal, Korphi t'Aroniou, Naxos, Early Cycladic. After Wedde [2000](#): Catalogue 413.



3.16 Green steatite seal showing two men in a boat with fish swimming underneath, Malia MM I. Wedde [2000](#): Catalogue 808, after Van Effentere 1980: 72, fig. 98. Courtesy of Michael Wedde.



3.17 Fragmentary boat from an LH IIIC pictorial krater, Kynos. After



3.18 Motif of a sailing ship from an LH IIIC stirrup jar, Skyros. Skyros Archaeological Museum A77.

Boat Models

There is reason to believe that small craft are better represented among Bronze Age model boats. Wedde's catalogue lists 50 models, 9 from the EBA, 5 from the MBA, and 36 from the LBA, with the largest group in LH/LM III. Unlike iconographic images, models, as three-dimensional objects, permit measurement of beam and can be used to calculate ratios of length, width, and depth of hull, but only a small number of the models are sufficiently preserved to allow measurement of all these dimensions. The pattern, cited above, that the measurable models cluster around a 1:3 width to length ratio suggests to Wedde (2000: 108) either a class of Aegean Bronze Age boats that were beamier than two-dimensional images suggest, similar perhaps in ratio and function to the Uluburun merchant ship, or that the models depict mainly small boats.¹⁸ In favor of the latter interpretation is the generally simple (sometimes crude) execution of the models and the lack of elaborate attachments and decorations; often a few tholes or thwart are the only molded attachments if any are present at all. Rarely a mast step or stump is present to indicate a sailing vessel (W301, 314, 323). Some models, notably in LH/LM III, were painted with banded and other linear decoration, or in some cases even more elaborate motifs, with clear parallels in painted fineware pottery and figurines (see Figs. 2.8, 3.2). The simplicity of many models and the width to length ratios are suggestive, but not conclusive, that these models are more representative of small boats than beamy cargo ships. Because many come from the mainland as well as islands (including Crete) under Mycenaean influence in LH III, the boat models form a significant body of material to illuminate coastal

interactions at regional and local scales.

Ethnographic Analogies

The benefits and dangers of using ethnographic analogy to illuminate poorly understood aspects of the distant past were discussed in [Chapter 2](#). When considering the forms and functions of boats, it is questionable whether analogies from contexts distant in space and time or from recent and historical times in Greece will be of much help, beyond the general assertion, already made, that the technology of small boats used in local and microregional settings is more conservative and enduring than that of larger seagoing ships. A more persuasive application of ethnographic data parses the relationships between the physical and performance characteristics of a boat, the mariners who sail it, and the relationships of maritime societies with the sea and with other maritime societies. Much of this information is important explicitly because we possess no tangible evidence to reconstruct nonmaterial aspects of Mycenaean maritime life, and ethnographic accounts provide new and diverse ways of thinking about them. The insights that can be gained from ethnographic data are taken up mainly in subsequent chapters in discussions of navigation and intersocietal interactions.

As indicated by the earlier quote from Greenhill and Morrison, local ship technology results from a complex combination of environmental and social conditions. The factors that make boats similar or different across space and time are conditioned on the one hand by the building materials, tools, and general level of technology available, and on the other hand by the tasks to be carried out in boats, which are shaped by subsistence patterns and by social needs (relationships of trade, kinship, friendship, intermarriage, etc.) within society and with people in distant locations. Because of the complex interplay of these factors, boats in societies facing similar environmental conditions and having comparable social structures may be dissimilar, while quite similar boats may be produced by societies sharing few social and environmental circumstances. The latter case is possible because certain universal factors come into play in simple boat technology. One of these concerns the widespread use of trees and plants as sources of construction material. Humans learned independently in many places that long tree trunks could be hollowed out to make dugout canoes, and long experience with the hydrodynamics of the form resulted in various modifications that responded to conditions both local and universal. In the Aegean, the dugout canoe was

apparently used during the Neolithic and persisted into the EBA, attested by four hammered lead boat models from EC II Naxos (W105–108) whose forms are remarkably similar to canoes in recent Pacific island traditions. Although the Early Cycladic longboat is an apparent descendant of the dugout canoe, dugout construction was replaced by plank-built ships and boats already in the third millennium BC. As we have seen, stalks of different plants (papyrus and giant fennel) had analogous uses in Bronze Age Egypt and modern Corfu, resulting in boats of similar form and function in two vastly different social settings. One way to make sensible use of comparative data on boat form and function is to draw upon performance characteristics derived from ethnographic observation as well as experimental testing of reconstructed “ancient” boats.

Performance

The performance of a ship or boat at sea depends on multiple and interacting technical, environmental, and human factors. The technical characteristics of the vessel govern the parameters of its behavior at sea and its tolerances under a range of maritime conditions, modified by alternative configurations and loads that may change from voyage to voyage. Thus, a merchant's sailing ship, like the one that wrecked at Uluburun, will have a sharply different performance profile from an Early Cycladic paddled longboat, quite independent of any environmental or human variables. Environmental factors include macro- or mesoscale forces such as weather and prevailing winds and currents, which in the Mediterranean are often subject to pronounced seasonality. The configuration of coastlines controls the distance between landfalls and the landing places that are suitable for different kinds of vessels; the distribution and contour of land masses in the sea influence visibility and navigational possibilities. The human dimension must take account of experience, knowledge of habitual and alternate routes, navigational knowledge and skill, and crew attributes such as technique, strength, and stamina. In the next chapter I consider in detail the environmental and human contribution to maritime travel; here I focus on what we can reconstruct of the technical performance characteristics of the different types of vessels we have proposed for the Mycenaean world.

Estimation of performance does not depend on a vessel's technical specifications alone, of course. Typically, when attempts are made to evaluate the performance of ancient ships on the basis of the technical parameters of their design, environmental and human factors are

neutralized, held “constant,” or “averaged.” The resulting projections are usually optimized or maximum performance limits. For this reason, ethnographic reporting offers the advantage that the complete interplay of technical, environmental, and human factors can be observed and assessed, and the reasons for success or failure to achieve optimal performance can be identified. To move toward valid comparisons between Aegean Bronze Age mariners and those living in our time in the Pacific, Alaska, or elsewhere in the world, the similarities and differences in all three classes of variables must be identified and assessed. Experiments with reconstructed ancient vessels have the advantage of sailing the same seas as their ancient counterparts, potentially facing many of the same environmental conditions specific to Aegean seafaring. The challenge with these experiments is instead to reach a satisfactory level of confidence that the physical specifications, and to a lesser extent the human performance characteristics, are right.

Let us consider some published data that have been offered as baselines for vessel performance in the Aegean Bronze Age. Cyprian Broodbank (2000: 101–106, 341–48) uses ethnographic data, calculations based on ancient hull remains, and experimental archaeology with “broadly analogous boats” to carefully outline the performance implications, as well as the profound social and economic transformations that attended the transition from paddled canoes and longboats to the first sailing ships in the late third millennium BC (Table 3.4). The advent of sailing technology, probably transmitted first to Crete via contacts with Egypt, brought in train a series of new performance capabilities. The ability to harness wind power increased the speed of voyaging significantly while also making longer voyages feasible by conserving muscle power. A sailing ship could now voyage from Crete to Egypt in the four days that were previously required for a longboat to reach Crete from the mid-Cyclades (Broodbank 2000: 345).¹⁹ This greater speed and range effectively shrank the Aegean and reconfigured maritime relationships. On Crete, the new maritime technology and the contacts it fostered with Egypt and the Eastern Mediterranean proved to be contributing factors to the rise of complex society and ultimately to the emergence of palaces and their elites, who exerted strong cultural and even political influence over the Cycladic islands in the first half of the second millennium BC.

Table 3.4. *Optimized performance characteristics for different types of Aegean Bronze Age seacraft (adapted and expanded from Broodbank 2000: tables 3, 12)*

Parameter	Small canoe	Early Cycladic longboat	Rowed or sailed galley	Uluburun wreck	Gelidonya wreck
Length	4–6 m	15–20 m+	Up to 35 m	15 m	10 m
Crew size	1–4	25+	Up to 100+ (penteconter)	Fewer than 10	Fewer than 10
Labor intensiveness	Low	High	High	High	High
Maximum speed	5 km/h	10 km/h	15/25 km/h (rowed/sailed)	25–35 km/h	25–35 km/h
Daily range	20 km	40 km	Up to 100 km (if sailed)	100 km or more	100 km or more
Overall range	Local/regional	Aegean	Long-distance	Long-distance	Long-distance
Wave tolerance	Moderate	Moderate	High	High	High
Harbor facilities	Minimal	Minimal	Sheltered harbor with sufficient draft	Sheltered harbor with sufficient draft	Sheltered harbor with sufficient draft
Cargo capacity	Minimal: 50–150 kg	Moderate: up to 1 ton as barge but low with crew	Moderate with full complement of rowers	15 tons+	> 1 ton
Ethnographic use	General purpose	War canoe and high-status voyaging	War and transport galley; piracy	Merchantman	Merchantman

The sail made new sea routes possible by allowing the ship to make considerable headway against the wind (Broodbank 2000: 345–46), though it remains controversial just how well they did so, and how often voyages of any length were taken against the wind (Tilley 1999). In this regard, nevertheless, the sailing ship was clearly superior to the galley in offering possibilities for sailing to windward.²⁰ With their limited sailing ability, galleys had recourse only to short bursts of exhausting rowing to advance into the wind. The implications of this limitation for sea voyaging are worthy of consideration. In a later period, Viking galleys served admirably in roles requiring speed, rapid deployment and escape, and transport of warriors. But as long-distance, open-sea sailing vessels, Alec Tilley (1999: 424) comments, “Wonderful though their galleys were, they made a long ocean voyage an adventure for heroes, not a profitable venture for merchants.” The situation for Mycenaean galleys must have been similar, even in the smaller world of the Aegean. Their movements must have involved coast-hopping with frequent stops, making long open-sea crossings only in the expectation of favorable winds. Still, we are left with a curious lack of evidence for true Mycenaean sailing ships capable of voyaging throughout the Mediterranean as merchant vessels.

Historical records indicate that in antiquity, ship captains often preferred to wait out fair winds rather than risk sailing to windward for extended portions of a journey. Sailors possessed techniques for

advancing against headwinds, but progress was often slow and the effort arduous. In the early 1970s, ethnographer Richard Feinberg accompanied a sailing canoe on a 50-kilometer voyage, into the wind, from Anuta to Patutaka in the Solomon Islands (Feinberg 1988: 89–91, 133–47, fig. 19). The navigator's technique was to take a favorable tack as far as possible under sail, then lower the sail and paddle back to the point where the initial tack could be resumed, marking out a zigzag path. Using this slow, strenuous process, the voyage took twenty hours. The trip home, running under a brisk wind, took only six.

The challenge presented by headwinds in the era before the sail appeared in the Aegean would have been that much greater, as the experiments conducted with the Corfiot papyrella illustrate (Tzalas 1995b; Fig. 3.19). Tzalas' point of departure was to evaluate the hypothesis that the obsidian that found its way from Melos to Franchthi Cave already in the Mesolithic period was transported on paddled reed boats, similar to those used in Egypt in the Bronze Age and in use until recently in Corfu, making the long voyage in a series of coastwise and open-sea segments. After resolving problems with construction techniques and recruitment of a five-person paddling crew, the team wished to set out from near Franchthi, only to discover that the circumnavigation of the Saronic Gulf would be so long and arduous as to give no advantage over acquisition through overland transport from a coastal anchorage much closer to Melos. The team subsequently chose to begin the voyage at Lavrion in Attica. This finding in itself deserves comment. In recent decades, it has become commonplace among Mediterranean archaeologists and historians (myself included) to assert that under conditions of ready access to the sea and underdeveloped terrestrial infrastructure, travel by sea would have been a more efficient and less arduous means of maintaining contacts with other coastal and near-coastal communities near and far. As a counterbalance to the land-focused reality in which most modern Western scholars live, this "corrective" has had some validity and utility. Yet the pendulum may have swung too far, such that the difficulties of sea travel are now underestimated, and long histories of overland connectivity disregarded. Still, Tzalas' claim that a coast-hugging voyage from Franchthi to Melos circumnavigating the Saronic Gulf "would have required much more time than the combination of a land voyage from the Argolis to Attica and a sea crossing from Lavrion to Melos" (Tzalas 1995b: 450) is jarring, since we would normally regard the overland journey from Lavrion to Franchthi as particularly long and difficult. Part of the solution may lie in a number of coastal nodes, lost in the rise of global sea level since the Mesolithic, through

which obsidian may have been exchanged in down-the-line fashion. It should be remembered that obsidian was recovered in only miniscule quantities from Mesolithic levels at Franchthi (Perlès 1990), making the notion of direct Franchthi to Melos runs all the more unlikely. If such intermediate settlements did exist, obsidian distribution would have entailed a series of short-distance trade expeditions by land or sea, a very different scenario. In the bigger picture, assertions such as these that run counter to current ways of thinking challenge us to develop more precise knowledge about how exchange worked at diverse scales, including the role of overland traffic.



3.19 Experimental Corfiot papyrella on the Aegean sea. The Papyrella Voyage is a project of the Hellenic Institute for the Preservation of Nautical Traditions. Courtesy of the photo archive of Theodor Troev.

As the papyrella made its way from Lavrion to Melos in early October, with two or three island stops scheduled, it encountered unseasonably (though not extraordinarily) rough weather, including heavy rain, high winds, and waves of 1.2–1.5 meters in height. As a result, in addition to seven days of paddling at sea, another eight days were spent anchored at Seriphos when severe weather and winds of 7 and 8 Beaufort made conditions at sea too dangerous. Thus, a relatively modest sea voyage of 120 kilometers might consume an entire month – or more, since the return voyage would face opposing sea currents and a greater chance of headwinds.²¹

The adverse environmental conditions proved to be a blessing in disguise, because they tested the design and addressed the research question in a way that perfect weather and a trouble-free voyage could not. The general seaworthiness of the Corfiot boat proved that the simplest kinds of vessels constructed with basic, universally available tools and materials were capable of island-hopping voyages in the Aegean. The technical and environmental problems encountered en route illustrate vividly some of the challenges the Aegean presents for small-boat captains.

By harnessing wind power, sailing ships reduced the need for human propulsion, allowing for smaller crews and increased cargo space. Merchant vessels of the LBA, of which the Uluburun ship is perhaps representative, improved sailing capabilities and cargo capacity while sacrificing speed and the ability to operate in shallow anchorages. As we have seen, the design of the Mycenaean galley moved in the opposite direction toward a fast rowing ship that maximized crew at the expense of storage and sailing capability.

Broodbank (2000: 346–47) indicates some important implications of the arrival of the sailing ship for coastal inhabitants. The increased speed, range, and cargo space triggered the establishment of new maritime networks as any particular place on the Aegean coast could now be reached more often, and from much more distant points of origin. The Aegean became smaller and contacts expanded. With greater range and cargo capacity, the transport of perishable bulk staples became feasible over longer distances, presenting an opportunity for small coastal communities, for whom self-sufficiency and highly localized subsistence networks had been a matter of survival, to expand into larger, nucleated settlements sustained by regional-scale exchange networks.

The transition from canoes and other light boats with minimal draft to broader, more heavily laden ships propelled primarily by wind power also meant that many shallow and/or exposed beachfronts could not accommodate the new ships. Sailing ships, with heavy sails, rigging, and cargo, could not be dragged out of the water, instead requiring anchoring or mooring in sufficiently deep water off the coast; nor could they easily get underway against strong winds. The result of these new requirements was a partial shift from the opportunistic use of a proliferation of small anchorages to the establishment of major dedicated harbors at the more limited number of suitably sheltered, deep-water anchorages that the Aegean offers.

The archaeological record of the Cyclades in EC III–MC I is plausibly interpreted to manifest these transformations. Old island centers lacking sheltered anchorages, such as Chalandriani-Kastri on Syros, declined while new nucleated settlements with excellent harbors (Akrotiri, Phylakopi, Paroikia on Greater Paros) grew and flourished (Broodbank 2000: 347–49). External influences, particularly from the emerging powers on Crete, expanded interaction spheres in the Aegean. Although Broodbank emphasizes the nucleation of settlement and maritime activity around the sheltered harbors once sailing ships were in place, I think it is important to assert that small boats and anchorages would not have disappeared from use. Although the configuration of many networks changed, with old relationships broken and new ones initiated, networks of local, regional, and interregional scope persisted in parallel or in nested arrangements that performed different but often complementary functions (more on this in Chapters 4 and 6). Certain coastal settlements will have participated in networks at all these scales, while others, generally smaller or less advantageously sited, did not. Some communities, especially on small islands lacking sheltered harbors and extensive, agriculturally productive hinterlands, were bound to suffer in the reconfigured environment, and Chalandriani-Kastri may be a good example. Yet there were alternative ways to adapt, and many small coastal communities must have been able to ensure their survival by reaffirming traditional links, establishing new ones, or strengthening ties to inland communities.

Building large sailing ships was not necessarily in the best interests or capabilities of small coastal communities controlling minor anchorages. Sails can equally be installed on small boats, even canoes, which could still use all the old landfalls. Thus, the same benefits of an expanded maritime horizon could be realized by small settlements, helping to compensate for periodic reorientations or interruptions in traditional relationships.

One area in which greater knowledge and attention are needed is in the relationship between coastal settlements and their insular or continental interior territories. Small islands, particularly relatively infertile ones such as most of the Cyclades, have little agriculturally productive land, and this has shaped their maritime histories and reliance on external sources of supply. On continental shores and large fertile islands such as Crete or Corfu, relationships with inland dwellers can be important. The complementarity of resources and commodities can stimulate symbiotic relationships, in spite of

common difficulties in communication caused by mountainous, broken topography. A town situated on a typical, small coastal plain with limited arable land may seek foodstuffs, timber, and other products from the interior, and these sources may have been more dependable than trade by sea, particularly during the months outside of the sailing season. The Uluburun wreck demonstrates that preserved foods, such as olives and wine, could be transported long distances by ship, but we do not know how pervasive the practice was, especially among small communities. Inhabitants of the interior would have desired certain kinds of imported raw and finished goods otherwise unavailable to them, such as obsidian from Melos, volcanic stone from Aigina or Methana for ground-stone implements, and metals for fashioning tools and the prestige objects with which they were often buried.

For coastal communities with recourse to relationships by both land and sea, the balance must have fluctuated over time with changing political, economic, and security conditions. The potential of regional-scale archaeological projects to describe and assess the mix of coastal–inland relationships in the Bronze Age is great, but still far from realized. This topic is addressed from a methodological point of view in [Chapter 5](#).

How, then, do these observations apply to the Mycenaeans, who plied the Mediterranean some five millennia after the Mesolithic inhabitants of Franchthi Cave, and the better part of a millennium after the introduction of the sail to Crete? In the LBA, sailing technology was long established in the Aegean; the Mycenaeans may have learned these skills directly from the Minoans, or perhaps through the mediation of the Aiginetans at Kolonna. Their maritime world was expansive within the Aegean, and perhaps they also undertook voyages to Egypt and the Levant – or at least as far as Cyprus and Ugarit – and to the central Mediterranean to visit southern Italy, Sicily, and the Lipari Islands. Yet, these far-flung contacts did not spell an end to local and regional connectivity by land or by sea. In any complex society, no matter how hierarchical, there are multiple nested economies, and the Mycenaeans were no different. Nowhere is this better illustrated than in the territory controlled by the palatial center at Pylos, where Linear B archives and archaeological discoveries reveal a hierarchical society with complex economies, of which the palace controlled only certain key elements. Local and microregional networks of interdependence, which coastal inhabitants shared with inland neighbors or their counterparts on further shores,

constituted economies every bit as real, and surely as prevalent, as the “palace economies” or the long-distance exchange of highly visible commodities. One aim of this book, pursued explicitly in the case studies, is to uncover the archaeological signatures of these smaller-scale coastal economies.

Conclusions: Mycenaean Ships and Boats

This chapter has examined the evidence for Mycenaean ships and boats, and summarized what can be surmised of their forms, functions, and performance characteristics. Only the galley is sufficiently widely attested in a range of media to allow a reasonable understanding of all of these categories. A case has been made for several other kinds of ships and boats, for which we have equivocal evidence or no evidence at all. This case has been an interpretive exercise relying on diverse information: contemporary non-Aegean boats, the Flotilla Fresco at Akrotiri, ethnographic data, shipwrecks, and interpretation of iconography and boat models. From this information, it is possible to suggest that the galley was joined in the Mycenaean repertoire by varied types of vessels that we might label with designations like canoe, fishing boat, rowboat, pilot, coasting vessel, merchant vessel, and so on.

Teasing out a fuller roster of ships and boats, and considering their likely physical and performance attributes, sheds light on the seas, coasts, harbors, and simple anchorages where they would have been active. With their properties and requirements in mind, the next chapter examines the physical characteristics of coastal settings in Greece, and the other parameters – environmental conditions and human skill – of travel to and from them.

Four The Maritime Environment of the Aegean Sea

The navigation of the Aegean Sea, though easy, requires constant attention, and a place of shelter should always be kept in view, so that safety may be assured before dark in the event of an approaching gale; the weather may become so thick that among the labyrinth of islands the land may be hardly seen in time to avoid it. (USNOO 1971a: 18)

Having considered the range of ships and boats that the Mycenaeans used, in this chapter I examine the environmental conditions for seafaring and navigation in the LBA Aegean area. The scope of inquiry must now broaden to include everything from global weather systems to minute local variations, since processes at all these scales interact to generate conditions at sea. I reconstruct many of these environmental parameters of navigation based on both modern data and ancient evidence, and give examples of their consequences for seafaring. I then discuss the practice of navigation in the Aegean, and conclude with speculation about the formation of maritime communities in the Bronze Age, and the means by which they and their knowledge were reproduced and perpetuated through time.

Environmental Conditions for Navigation

The environmental conditions for navigation in the Aegean Sea are produced by complex interactions of atmospheric, hydrospheric, and lithospheric (terrestrial) forces operating at different scales, i.e., global; basin-scale (Mediterranean); sub-basin-scale (the eastern or western basin of the Mediterranean, or one of its constituent bodies of water such as the Aegean Sea); mesoscale (e.g., contained within the Aegean); or microscale (local; Robinson et al. 2001: 1). Global atmospheric systems account for much of overall Mediterranean variation, but they are modified by interactions with smaller-scale processes, from basin-scale to microscale, to produce the localized

conditions that navigators encounter in the coastal and offshore waters of the Aegean (Oddo et al. 2009). The flows of air and water at all scales are driven by gradients in pressure, temperature, and density, as well as by terrestrial and submarine topography.¹ What follows is a summary of the most salient environmental factors that impact navigation of the eastern Mediterranean, taking account of recent meteorological and oceanographic research and addressing the specific conditions of the Bronze Age.

Global-Scale Processes

At the global level, interactions between the earth's atmosphere and oceans generate massive high- and low-pressure systems that create climate and weather around the world. These systems have distinct seasonal patterns through the year in response to temperature and pressure gradients, solar and lunar gravitational effects, and other factors. In the late Holocene, they have established “typical” patterns or *oscillations* of different scales and durations. For example, the North Atlantic Oscillation (NAO) describes a pattern in winter of low pressure centered over Iceland while high pressure prevails over the Azores. The NAO manifests itself through precipitation, sea-level pressure, sea-surface-temperature storm tracks, and temperature, and is most pronounced between December and March as a result of an increased contrast in sea/air temperature (Mayhew 2004). But these systems are also subject to shifts that may be periodic and predictable, such as the El Niño and La Niña cycles of the Southern (Pacific) Oscillation, or aberrations of unpredictable timing and duration. An extreme shift in the high- and low-pressure centers of the NAO has been implicated in the “Little Ice Age” that brought intense cold to western Europe from the fourteenth to the mid-nineteenth centuries AD, spreading famine and affecting the course of history (Fagan 2000).

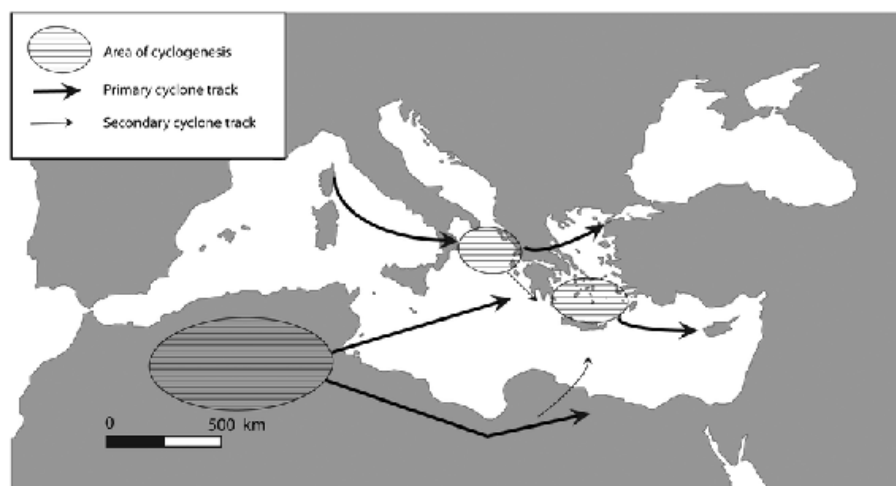
Historians and archaeologists have advanced a relatively simple model that places the Mediterranean at the junction of four global atmospheric systems, the interactions of which create the characteristic Mediterranean climate of mild, wet winters and hot, dry summers, and set the conditions for basin- and sub-basin-scale weather patterns (Agouridis 1997: 3; Grove and Rackham 2001: 25–27; Pryor 1988: 15–17). Each system produces successive waves of pressure cells and fronts that enter the Mediterranean through gaps in blocking mountain ranges (Pryor 1988: 15). Generally, systems tracking eastward from the Atlantic interact with the warm

Mediterranean water and cold mountain air, as well as with fronts moving south from the Eurasian continent, to produce complex and variable localized weather (Pryor 1988: 16). In winter, the Mediterranean climate is dominated by the effects of the North Atlantic low over Greenland and Iceland (part of the NAO) and the continental Mongolian high. Storms and winds generated by the North Atlantic low track eastward and affect mainly the western basin of the Mediterranean, while the Mongolian high prevails in the eastern basin. In summer, the North Atlantic low retreats toward the pole and the Atlantic subtropical high (Atlantic Oscillation) over the Azores intensifies, exerting strong effects over the western basin. At the same time, the Mongolian high retreats and the Indo-Persian low prevails over the eastern basin. Recent meteorological and climatological research shows the effects of global-scale systems on the Mediterranean to be considerably more complex and far-reaching (see, e.g., Basharin 2004; Bengtsson et al. 1996; Hahmann et al. 2008; Park 2004; Rodwell and Hoskins 1996; Xoplaki 2002; Xoplaki et al. 2006), but even simplistic models demonstrate that shifts and disturbances in large-scale atmospheric systems around the world can have substantial effects on climate and weather at human temporal and spatial scales in the Mediterranean.

Basin-Scale Atmospheric Processes

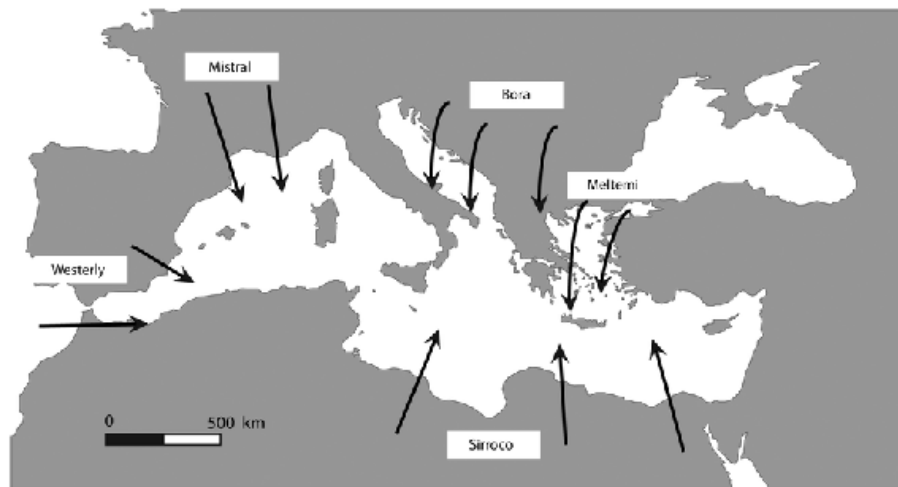
In addition to establishing a seasonal climate regime, global-scale weather patterns affect atmospheric conditions in the Mediterranean in a variety of ways that impact the maritime environment. Cyclogenesis, the formation of cyclonic storms, is more intense in winter in the Mediterranean than anywhere else in the world (Fig. 4.1). This activity is largely controlled by global air flows and climatic trends over Europe, including the influence of the NAO. Cyclones form readily because of the sharp temperature gradient between the cold winter air, particularly from major mountain ranges, and the relatively warm sea surface, which releases heat into the air above. Mediterranean cyclones are smaller than large oceanic cyclones and hurricanes (most are less than 650 kilometers in maximum radius, compared to 1,000 to 2,000 kilometers in the Atlantic), and have shorter lives (averaging 28 hours versus three to three and a half days in the Atlantic). Cyprus and the Aegean Sea are locations where cyclones tend to reach full strength, primarily in winter. Not all of these cyclones are intense and dangerous, but those that are intense are closely linked to high-impact weather, including strong winds accompanied by torrential rains and heavy seas with swells and choppy, short-frequency waves, as is characteristic of the Aegean

(Homar et al. 2007). These conditions may generate storm surges that occasionally visit extensive damage on coastal areas.



4.1 Centers of cyclogenesis in the Mediterranean. After Brody and Nestor 1980: VI-22, fig. VI-15.

No general wind current dominates the entire Mediterranean basin at any time of year; instead, the variability in topography and global weather patterns prevailing over different parts of the Mediterranean at different seasons gives rise to a number of regional winds (USNOO 1971b: 50–52; Fig. 4.2). Three regional winds, the *meltemi* (pl. *meltemia*; the ancient *Etesians*), the *sirocco*, and the *bora* especially affect the Aegean region. The prevailing winds of the Aegean are northerly throughout the year, but are most marked during the summer months. The *meltemia* are moderately strong and persistent northerly winds generated by a substantial pressure gradient between a deep summer heat low over the Red Sea and an area of relatively high pressure over the Eurasian continent. During July and August the *meltemia* blow steadily over the Aegean, most strongly in the southeastern Aegean, where they interact with landforms to attain a frequency of 80% or more. Such winds can blow especially strongly when funneled into constricted spaces, such as the Doro Channel between Euboea and Andros, or the straits in the Cretan Arc separating Kythera, Crete, Karpathos, and Rhodes (Soukissian et al. 2002: 186–88).



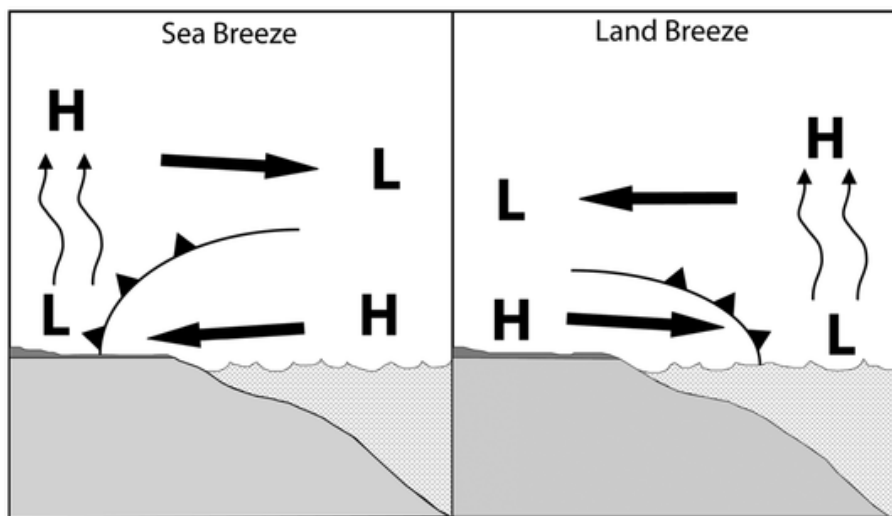
4.2 Regional winds of the Mediterranean.

The bora is a cold, dry continental northerly wind that enters the Adriatic Sea through the Trieste gap, where it sometimes encounters a passing depression in winter, spawning violent squalls and gale-force winds.

The sirocco (known regionally under various names), by contrast, is a southerly wind originating in the desert regions across the entire expanse of northern Africa. Siroccos are dry winds that are hot in summer and warm in winter. They transport a great amount of dust, forming haze over the Aegean and contributing to the aeolian content of Mediterranean terra rossa clays (Durn 2003; Yaalon 1997). Affecting mainly the southern Aegean, the sirocco can be accompanied by rain when it intersects with a low-pressure system moving eastward across the Mediterranean, primarily in winter, or when it encounters high relief after absorbing moisture from the sea. When such conditions are absent, the sirocco produces cloudless, hazy conditions by day with low stratus clouds and heavy dew at night (USNOO 1971b: 51).

Regional winds can be complemented, or even augmented, in coastal areas by more localized wind formational processes, including land and sea breezes, mountain and valley winds, and the effects of winds encountering topographic obstacles. Land and sea breezes are persistent, regular features that result from the differential heating and cooling of adjacent land and sea masses (Morton 2001: 51–53; Fig. 4.3). In a typical diurnal cycle, after sunrise the land heats faster because it absorbs heat from sunlight more efficiently but to

superficial depths, whereas the sea reflects more sunlight, loses heat through evaporation, and dissipates heat through a greater depth. As temperatures rise through the morning, air pressure builds over land much faster than at sea as warm air ascends, creating a pressure differential that initiates a flow of air well above ground level from land out to sea, and a compensating flow of cooler air from sea to land at ground level. The latter is the sea breeze felt onshore by mid-morning, increasing in strength through the afternoon. As sunset approaches and temperatures begin to drop, the pressure gradient decreases and a period of calm develops in the evening. At night, the opposite process generates a land breeze. As cooling proceeds, a pressure gradient develops as heat is lost more quickly on land. Higher pressure develops over the sea, initiating a flow of warm, rising air toward land, with the compensating flow of cooler air, the land breeze, out to sea at ground level. Another period of calm prevails in the hours around dawn as temperature and pressure differentials are once again minimized. Because heating induces a larger gradient than cooling, and because sunlight is variable, sea breezes are both stronger and more variable than land breezes. Sea breezes are also more prominent in summer because uninterrupted sunny days and intense heating create particularly strong temperature and pressure gradients. Strong sea breezes can effectively supersede the effects of regional winds in local coastal settings. They can be a help or a hindrance to navigators, pushing boats toward safe anchorage or dangerous shallows.



4.3 Basic dynamics of land and sea breezes.

Mountain (katabatic) and valley (anabatic) winds are generated by

the same diurnal cycles that create land and sea breezes (Morton 2001: 53–56). In this case, valley bottoms heat up during the day more rapidly than surrounding peaks and ridges because they are sheltered from winds and their shape promotes radiational heating from enclosing slopes. As air from the valley bottom is heated by the sun (again, more prominently in summer), it flows up the valley walls as an upslope wind, often forming cumulus clouds above the valley rim that may produce rain. Denser, cooler air sinks into the valley to replace the warm, rising air. This mixing creates a more turbulent mass of cooler air that blows along the valley axis in the direction of the prevailing regional winds. At night, the slopes and bottoms cool at a faster rate than they warm during the day, initiating a rush of cold, dense air downslope into the valley and along its axis as a mountain wind (also known as a gravity or drainage wind). Valley and mountain winds are stronger in sunny or clear conditions because of stronger associated temperature and density gradients, and they can be forcefully augmented by regional winds such as the meltemi. Valley and mountain winds affect coastal areas when mountain or stream valleys extend to the coast. A good example is the *vardari* wind that blows down the Axios River valley to the sea in the Thermaic Gulf, which is irregular and can be quite strong.

A type of wind of great concern to navigators is that produced by the displacement of air currents upon encountering topographic obstacles (Morton 2001: 56–61). This displacement can be vertical or horizontal, and the turbulence caused by the disturbance of the air flow ranges from minimal to violent, depending on a host of factors including wind speed, the stability of the air mass, the angle of the contact, and the shape and height of the topographic feature.

Vertical displacement of wind over an island, promontory, or high coastline produces turbulence as slower moving air at or near sea level is pushed up through faster moving air aloft; the faster the wind speed, the greater the turbulence. If the air mass is stable, that is, not subject to strong differentials in temperature and pressure with altitude, the air passing over the obstacle returns to sea level by flowing down the lee side, but this flow is characterized by strong winds accompanied by atmospheric eddies, wind gusts, and lulls. These conditions produce the well-known phenomenon of violent winds and squalls on the lee side of islands and coastal features. The southern coast of Crete is an excellent example. Psiloriti (2,457 meters) and the other peaks of the central Cretan mountain range place a formidable barrier in the path of northerly winds that blow for

most of the year. The extreme vertical displacement of these air masses sends violent winds down the lee side of the mountains to the southern coast, and spawns squalls and gales. This coast is not particularly hospitable in any case, possessing relatively few and widely spaced anchorages, but even anchorages with good water depth and holding ground are generally vulnerable to bad weather from the south in winter and the strong northerly squalls year-round. Modern sailing manuals are full of warnings about sudden, violent squalls that blow down from the mountains, threatening to pull boats from their moorings and anchors, or to dash them against shores and shallows (e.g., USNHO 1951: 111–21). Conditions such as these will have had a significant influence on sea routes, and thus equally on the form that maritime networks of economic and social relations took.

If the air displaced vertically is unstable, usually involving a strong temperature and moisture gradient with altitude, the warm, moist air continues to rise in the atmosphere, causing condensation and forming rain-producing cumulonimbus clouds. These rains tend to fall in concentrated bursts, often as thunderstorms accompanied by cold, powerful downdrafts that spread over the sea, spawning squalls over great distances (Morton 2001: 59–60).

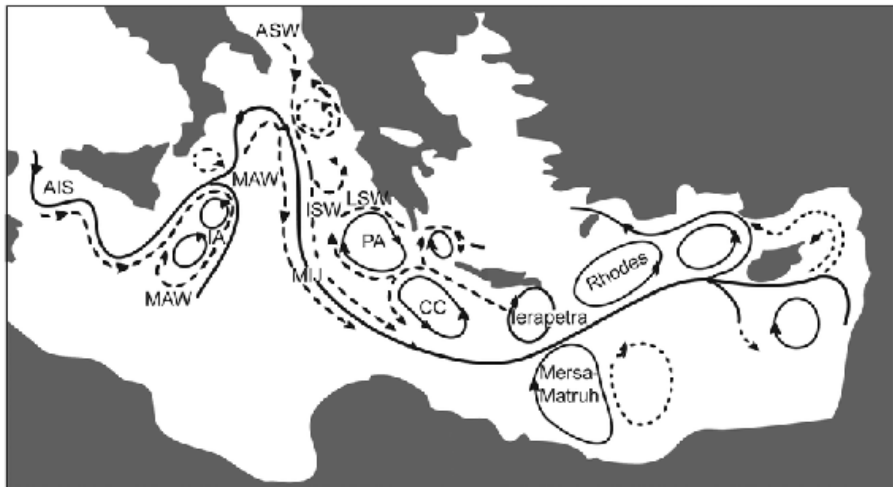
Thus, the effects of topography can intensify winds as well as weather, either episodically, seasonally, or perennially. Yet even if these effects are known and expected, they are irregular and unpredictable because the factors – wind speed and direction, form and orientation of obstacles, season and time of day – are so variable alone and in combination (Morton 2001: 60).

Horizontal displacement occurs when an air stream encounters a low-lying topographic feature, such as a long promontory or a low, broad island, causing a flow of air around one or both sides of the barrier. These flows do not typically produce high winds, except where displaced air is funneled into a narrow gap or strait. The accelerated winds and currents in the narrow strait between Euboea Island and the Greek mainland, or the strait running from the Bosphorus to the Dardanelles, are characteristic results of the funneling process of flows of air and water.

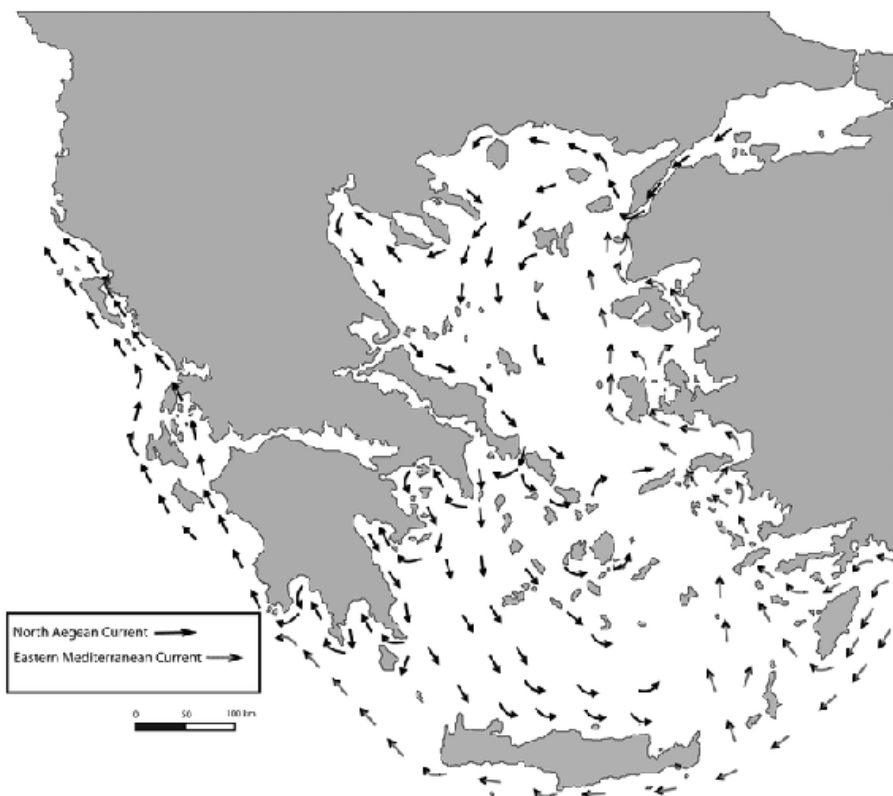
Basin-Scale Surface Water Circulation and Currents

Atmospheric interactions with the sea also play a key role in determining water circulation in the Mediterranean Sea. This circulation is complex because the Mediterranean is large enough to be subject to the same dynamics that characterize global ocean circulation (Robinson et al. 1992: 285, 2001: 1). The Mediterranean Sea is open only to the Atlantic Ocean at the Straits of Gibraltar and to Black Sea waters through the Dardanelles straits. The Mediterranean basin is divided into roughly equal western and eastern sub-basins, with the effective boundary between them lying at the Sicilian straits. Sea circulation is forced by water exchanges with the Atlantic Ocean and Black Sea, winds, buoyancy effects of different water masses at the surface due to water density (temperature and salinity) contrasts (*thermohaline circulation*), and topographic features including islands, coasts, narrows, and bathymetry. There are three types of water masses defined by depth: surface waters, intermediate waters, and deep and bottom waters extending to the sea floor. On an annual basis, evaporation, particularly intense in summer, exceeds the total input of rain and river outflows into the Mediterranean, resulting in water fluxes from the Atlantic Ocean and Black Sea. Most of the deficit is rectified by Atlantic water through Gibraltar (71%), with much smaller contributions from rivers (25%) and the Dardanelles (4%; Agouridis 1997: 3). Thus, water exchanges with the atmosphere drive the influx of lower-density ocean waters, which in turn determines the thermohaline circulation of water and many of the characteristics of the marine ecosystem in each basin (Zervakis et al. 2004: 1846).

Water from the Atlantic enters as a coherent surface stream because of its lower salinity, and thus low density, relative to the Mediterranean water. The flux is most intense in summer when evaporation over the Mediterranean is highest, creating a current of six knots or more. This buoyant stream flows eastward, becoming denser and less coherent as it mixes with other water masses and is affected by evaporation and convection. Along the way, it exhibits instabilities as it interacts with powerful gyres (see below), and bifurcates into multiple pathways, yet it reaches the Levantine coast as a distinct stream (Fig. 4.4).



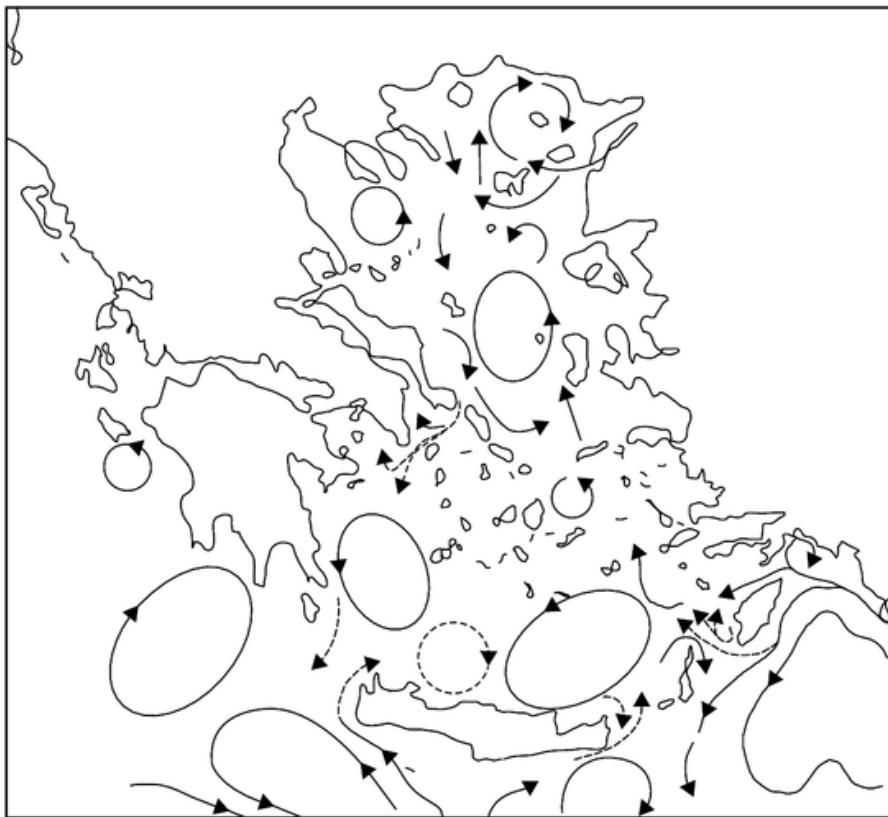
4.4 Mediterranean currents and water circulation. Drawing by Felice Ford after Roussenov et al. 1995: 13,516, fig. 1.



4.5 General sea-surface circulation flow in the Aegean. After Papageorgiou 2009: 209, fig. 3.

By contrast, the volume of Black Sea Water (BSW) that enters the

Mediterranean through the Dardanelles is much smaller and produces significant effects only in the Aegean Sea (Kourafalou 2007; Kourafalou and Tsiaras 2006; Fig. 4.5). The BSW brings less saline and thus less dense surface water into the Aegean to spread over the warmer and more saline intermediate waters. The general cyclonic (counterclockwise) flow of water around the Aegean is promoted by the north- and westward trajectory of the powerful plume of BSW exiting the narrow Dardanelles Strait. Driven by buoyancy, winds, and the complicated topography of the Northern Aegean, the BSW is deflected to the west along the rim of the northern Aegean coast, and subsequently driven by strong northerly winds down the eastern coast of Greece. Following seasonal patterns, the current is partially deflected to the Cycladic islands and the central Aegean, and partially pushed southward along the eastern coast of the Peloponnese, where it meets the eastward flow of Mediterranean waters from the Ionian Basin and is entrained by these and by the land masses of the Cretan Arc to flow east into the southern Aegean. Finally, the flow joins the Asia Minor Current (AMC), carrying warm, highly saline Levantine waters north along the eastern coast of the Aegean. When the AMC meets the outflow of the BSW, an intense thermohaline front is formed, which is partly responsible for the strength of the Dardanelles current. In this way the general cyclonic circulation around the Aegean rim is completed.

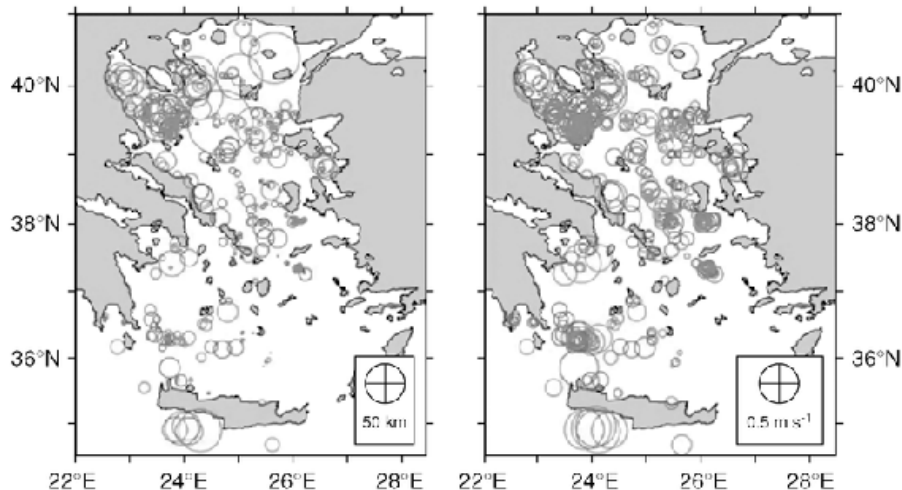


4.6 Typical positions of major cyclonic and anticyclonic gyres in the Aegean. Data from Olson et al. [2007](#); Sayin et al. [2011](#).

At sub-basin scale, Aegean currents are constantly affected by *gyres* and *eddies*. Gyres are oceanic surface currents driven by the interaction of the strong Dardanelles outflow with the topography of the Aegean sub-basin, including narrow straits and underwater basins, ridges, and plateaus; the complex shape of the shoreline; and the prevailing northerly winds ([Fig. 4.6](#)). Their spiral form is due to the interaction of pressure gradients and the Coriolis effect, which deflects water flow to the right in the Northern Hemisphere and to the left in the Southern Hemisphere. Sub-basin gyres typically have diameters in the range of 200 to 350 kilometers. They can be cyclonic (rotating counterclockwise) or anticyclonic (rotating clockwise) and their duration can be characterized as permanent, recurrent, or transient. They may also exhibit strong seasonal, interannual, or multiannual behaviors. They are distinct from, but analogous to, atmospheric cyclones and anticyclones. The current temperature and sea surface pressure generated by gyres may exert measurable effects on regional temperature and rainfall as they interact with atmospheric forces.

Similar hydrospheric interactions give rise to mesoscale *eddies* throughout the Aegean, and it is these that most directly affect local – including coastal – currents. Eddies are small-scale currents of water moving against the main current with a circular motion; in the Mediterranean they have diameters in the range of 10 to 14 kilometers, about one-fourth the size of oceanic eddies (Robinson et al. 2001: 5). Like gyres, they can be cyclonic or anticyclonic, and they may be transient or longer lived. They are fairly evenly distributed throughout the Aegean, but anticyclonic eddies occur with greater frequency around the edges of the basin, while cyclonic eddies are more prevalent toward the basin interior.

Eddies are spawned where currents are interrupted by topographic features, or where differences in pressure, temperature, or density exist. Fields of transient eddies form along the border swirl flow of sub-basin-scale gyres; they may then break off to meander in the open sea (Fig. 4.7). In the Aegean, the inflow of BSW at the Dardanelles sets into motion a series of conditions in which eddies emerge, beginning with strong anticyclonic eddies that form in response to the high pressure of the narrow outflow channel and the thermohaline front between the buoyant BSW and the denser Aegean waters. These anticyclones then spread out along the path of the BSW as effects of density gradients. Along the way, the irregular features of the shoreline, for instance headlands or peninsulas and deep inlets, modify the path and motion of currents, spawning eddies that can ride along linear coastlines and fill bays. Donald Olson and colleagues (2007) describe the effects of eddies in the large Thermaic Gulf (with Thessaloniki located at its head). Some of the BSW flow enters the gulf, creating a dense pattern of eddies, dominated by cyclones at the mouth of the bay and anticyclones within it. The anticyclonic rotation forms a rim current that is intensified by the inflow of three major rivers (the Axios, the Aliakmon, and the Loudias) into the gulf. The current is further complicated by the effects of two northerly winds, the meltemi and the local *vardari*, a strong northwesterly valley wind that blows irregularly from the Axios (ancient Vardar) river valley (Olson et al. 2007: 1904),² as well as a sea breeze that forces strong diurnal surface currents within the gulf (Hyder et al. 2002). Contexts such as the Thermaic Gulf amply demonstrate multiscalar atmospheric, hydrospheric, and terrestrial forces interacting to create local conditions that are highly malleable and distinctly seasonal (Kourafalou and Barbopoulos 2003).



4.7 Distribution, size, and intensity plots of eddies in the Aegean. Olson et al. 2007: 1914, fig. 15. Courtesy American Meteorological Society.

Waves

Wind stress, the drag or tangential force exerted on the earth's surface by adjacent layers of moving air, is the principal engine of oceanic wave formation (Morton 2001: 30–37). These waves travel in the direction of the wind, gaining height and strength so long as the wind continues in the same direction and the waves do not encounter topographic obstructions. Once the wind stops or changes direction, the wave continues some distance under its own momentum, sometimes causing the clashing of waves moving in different directions. The gales, squalls, and other stormy weather typical of the Aegean can produce rough seas with high waves and swells. Because of the irregular pattern of wind flows and gusts, waves in the open Aegean tend to be choppy, short-frequency waves that would have been dangerous for the small craft of the Bronze Age (Broodbank 2000: 101). The concentration of stormy weather and rough seas in winter explains the general avoidance in antiquity of open-sea sailing in the Aegean from October to March. Once waves approach coastal areas, they are affected by several factors that determine their contact with the coast and the effects they might visit upon watercraft and coastal settlements. Among these factors are the form and magnitude of the wave, measured by wave height and wavelength; wind speed and direction; the angle of contact with the coastline; and surface and subsurface topography along the coast. The configuration of the

coastline, including its shape and the extent and form of any submarine coastal shelf, may serve to magnify or minimize the force of waves breaking against the land mass. In general, shorelines with long promontories and gradually sloping underwater shelves extending far out to sea induce waves to break well offshore, minimizing potential wave damage. By contrast, shorelines that slope steeply into the sea with little offshore hindrance to water movement can magnify the violence of waves breaking on the shore. Considerations of protection from damaging waves are similar to those of exposure to winds, and figured in the placement of harbors in the Bronze Age.

The combination of intense weather events, northerly winds, waves, topography, and swift current flow with complex patterns of eddies affecting the western coast of the Aegean is implicated in many shipwrecks in recorded history. Perhaps the most famous of these befell the Persian fleet in three separate incidents during invasions of Greece in the early fifth century BC. In 492, Darius's fleet under Mardonius was wrecked by a northerly gale while rounding the Athos peninsula (Herodotus 6.44). Many of these ships were battered against the rocky peninsula. Later, Xerxes' fleet suffered two major shipwrecks in the summer of 480 BC. The first of these occurred on the long and nearly harborless Magnesia coast near Artemision/Cape Sepias (Herodotus 7.188–92). There, a great four-day storm driven by meltemi winds from the northeast roiled the sea in high waves, sinking ships caught in the open sea and dashing others onto the rocks along the rugged coastline. Remarkably, Herodotus records that locals called these storms “Hellespontian” (i.e., originating in the Dardanelles). The third disaster took place while the fleet was sailing off the “Hollows of Euboea,” that is, the eastern coast of the southern half of Euboea, before entering the Doro Channel (Herodotus 8.12–13). In that event, a violent storm driven by northerly winds rose at night and dashed ships against the coastal rocks. These calamities present a characteristically Aegean cocktail of hazards: violent squalls and heavy seas that arise at night, forced by high northerly winds and swift, shifting coastal currents, driving ships toward nearly invisible rocks and shoals on a rugged coastline with few opportunities for safe anchorage. The Persian shipwrecks also illustrate the way that phenomena at all scales, from global to local, interact to produce conditions experienced at human scale.

Aegean Variability

By virtue of its geographical position – a long north to south axis closed in on the north by the land masses of Greece, Anatolia, and the Balkans, and in the south opening into the broad eastern Mediterranean – as well as a complex topography, the Aegean Sea creates a unique maritime environment. The environmental forces that drive atmospheric and hydrospheric circulation converge and cross-cut the Aegean basin in such a way that local conditions, resulting from the interaction of forces operating at all scales, are highly diverse and changeable. The greatest differences are evident as one moves from north to south, through successive influences of continental, Mediterranean, and desert climatic zones, but significant contrasts also occur between the mainland and islands, as well as between contrasting topographic settings regardless of geographical location. Furthermore, seasonal patterns in environmental conditions give a very different character to a given coastal setting through the year. A brief survey of atmospheric conditions in the Aegean, and an example of seasonal variation at a single Aegean port, will highlight some of these contrasts.

Atmospheric Conditions in the Aegean Sub-Basin

The Aegean Sea is not excessively windy, cloudy, or stormy when compared with ocean waters such as the North Atlantic. Gales and storms of Beaufort 8 and higher (winds in excess of 62 kilometers per hour) occur in 5% or fewer observations, while light to moderate squalls are somewhat more frequent at 10% in winter, but only 2% in summer (USNHO 1952: 10). Dead calms are also rare, however.

Summer disturbances differ from those in winter. In summer, low-pressure disturbances tend to pass over the Eurasian continent, well north of the Aegean, or remain to the west of Greece. In frequency and severity these are greatly reduced from winter, rarely interrupting the prevailing northerly winds or local sea and land breezes.

Winter gales may arise from several directions, associated with depressions moving east-northeast past southern Greece from Libya, or east-southeast from Italy to cross the Greek mainland. Winter winds are more variable and unstable because of the greater number of high- and low-pressure systems that move through the Mediterranean, which determine the occurrence and severity of winds and storms. Low-pressure systems (depressions) crossing the Mediterranean from the west are often preceded by strong southerly winds. Once a storm passes over the Aegean, the wind shifts through several directions and

brings showers and squalls. At other times, cold polar air from high-pressure systems over the Eurasian continent may pass to the south, pushing against the depression and generating strong winds from the north or northeast, accompanied by showers, sleet, or even snow. These storms are particularly dangerous at night on the windward side of coasts and islands because of low visibility and heavy seas; ships encountering these conditions are well advised to make for southern, lee shores. If the continental high enters the Aegean with no depression to the south, skies will be clear with strong northerly winds. The general winter pattern is that the northern Aegean remains chiefly under the influence of the continental high, and thus northerly winds, while the southern Aegean experiences frequent low-pressure systems and a mix of southerly and northerly winds. The frequency of strong winds varies by island or coastal location, and by windward or leeward position. Temporally, the greater frequency of storms and dangerous sailing conditions in winter defined the nonsailing season, as we know from ancient Greek sources beginning with Hesiod (*Works and Days* 620–95), but these conditions did not preclude maritime communication completely, as we shall see.

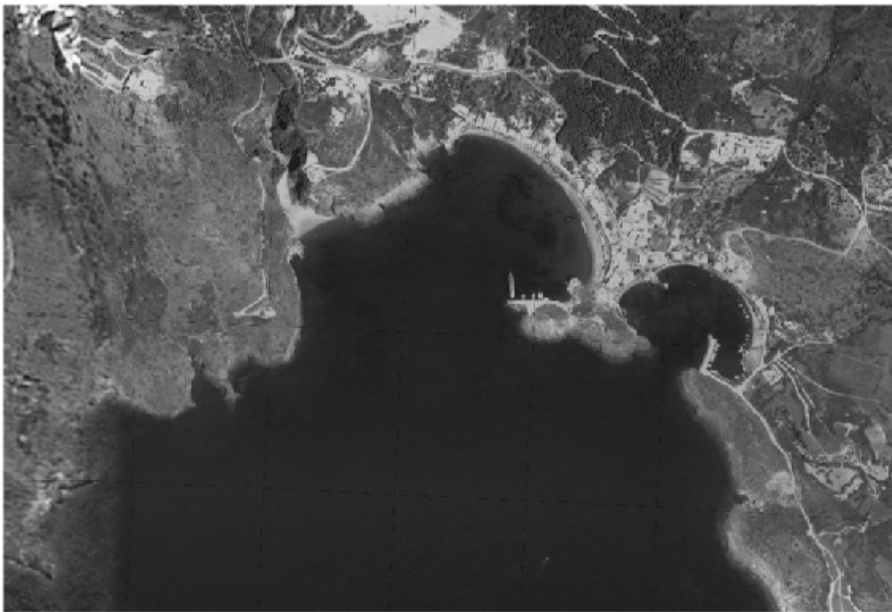
The prevailing winds from the north are most marked during the summer meltemia. Although meltemia are fair-weather winds, when blowing strongly they may kick up “white squalls,” so named after the appearance of agitated water in sunlight. Locally, however, these and other winds can vary widely due largely to topography, and in summer to land and sea breezes. While land breezes are always light, sea breezes may be strong enough to disrupt or even eliminate the effects of the meltemi. An example of this phenomenon is the coastal promontory at Gytheion in Laconia. There, the meltemi is dissipated by the Taygetos mountains to the north, which shield the Gytheion area. Instead, sea and land breezes dominate during the day, with gusts off the mountains occurring at night. When forceful, sea and land breezes can be used strategically by navigators to make progress against prevailing winds and currents. By contrast, at Kythera Island off the south coast of the Peloponnese facing Gytheion, the meltemi becomes the prevailing wind in late summer as the sea warms and consequently the sea breeze generated by land/sea temperature differentials diminishes (USNHO 1952: 11). The north-facing anchorages are particularly vulnerable to northerly and westerly winds (Heikell 2007: 144–48).

Cloud cover is light overall, with summer skies seldom overcast, but heavier in winter when most precipitation falls. When clouds do

occur, a diurnal pattern of minimal cloudiness in the morning, followed by increasing clouds in the afternoon and dissipation in the evening, is common throughout the Aegean. During winter, cloud cover averages 50%, with little variation from November to April. Great banks of clouds shrouding mountain summits often precede bad weather, especially in the northern Aegean.

Consistent with a characteristic Mediterranean climate, the Aegean region experiences distinct wet and dry seasons, with most rain falling between October and March (Xoplaki [2002](#): 10–12, figs. 1.1, 1.2). Driven by the great weather engines described above, the precipitation of early winter is often heaviest as warm, moist air forming over the open Mediterranean comes into contact with cold, drier polar air lying over the Eurasian continent.

Rainfall patterns across the Aegean basin are variable; the frequency, timing, and amount of rain a particular locality receives depend on several factors. In the northern Aegean, southerly winds contribute most of the rain, though northerly systems sometimes deposit snow. In the southern and central Aegean, southerly, westerly, and northerly winds can all bring rainfall. Because Mediterranean depressions carry abundant moisture, the islands of the southern Aegean, exposed to eastward-tracking depressions from the central Mediterranean, receive more rain than the Greek mainland, but in lower-frequency, higher-volume events. Rains seldom last for more than a few days at a time. On the mainland, rain occurs most frequently in the afternoon, while over the sea and islands, rainfall at night or early morning is more common.



4.8 Satellite image of Kapsali Bay, Kythera. Image © [2011 Google Earth](#), © 2011 European Space Imaging.

Sometimes rain effects are topographic in origin. The northwestern Greek province of Epirus is an area of high rainfall because storm systems crossing the mainland from the west are halted by the Pindos mountain range. There, the clouds release rain (“orographic rainfall”: Morton [2001](#): 64–65), which then drains down the western side of the Pindos to feed large perennial streams and springs. A corresponding “rain shadow” region on the eastern side of the Pindos is much drier. In the mountainous Greek terrain, such rain surplus and deficit relationships are common on both macro- and microregional scales, detectable, for example, even between Athens and its northern suburbs. All areas of the Aegean are also subject to potentially large interannual fluctuations in rainfall, which in drier areas such as the Cycladic Islands can have dire implications for subsistence (Broodbank [2000](#): 76–78).

Seasonality at Kapsali Bay, Kythera

The harbor at Kapsali Bay, on Kythera's southern coast, provides a typical example of the seasonally changing environmental conditions experienced at a southern Aegean anchorage (Naval Research Laboratory [2007](#)). The southwest-facing harbor exhibits a classic configuration favored in the Bronze Age: a double-lobed harbor formed by a protruding headland with small, indented bays on either

side (Fig. 4.8; see Chapter 5 for the configuration of Bronze Age harbors). The headland separates a larger, less sheltered western harbor from a smaller, shallower eastern harbor that is better sheltered by a narrow entrance. Kapsali Bay has relatively few modern built installations that artificially alter the impact of seasonal weather conditions. Boats may find mooring within the bays or lie at anchor just outside them.

Facing southwest, Kapsali Bay is exposed mainly to winds and weather from the west and south. The steep relief of the land to the north shields the harbor from the prevailing northerly winds, but when these are particularly strong, powerful gusts and squally weather can be produced by the vertical displacement of winds to the lee side of this prominent topographic feature. At the same time, coastal sea breezes flowing north are strongest in summer and may offset the prevailing northerlies, resulting in light wind conditions in the afternoon and early evening.

In spring, a long transition occurs between winter and summer conditions. Migratory winter cyclones may continue to arrive from the west well into May. Southerly siroccos peak in frequency and intensity in spring, and if particularly strong may make the harbor unusable for small craft (Heikell 2007: 146). They bring cloudy conditions with light rain and dust (producing “red rain”), with winds of 22 to 33 knots and waves of 1.1 to 2.1 meters. Sirocco events may last for several days, but because they develop slowly over a day or two and are preceded by altocumulus clouds, they can be anticipated and proper precautions taken. When stormy conditions are not present, northerly winds prevail.

Summer brings typical Mediterranean conditions: a nearly cloud-free, precipitation-free sky with warm temperatures and few hazardous weather concerns. Northerly winds prevail, notably the meltemi, which may be felt at varying strength from May to October. Strong meltemi winds may persist for days at a time, but the effects are usually diminished by a counteracting sea breeze. The onset and first day of a meltemi event may be marked by thunderstorms in May to June and September to October, but in July and August only by scattered altocumulus clouds.

In autumn, the onset of the winter pattern is usually rapid, occurring around the third week of October. The first storms of the season are migratory cyclones from the west. Though these are not as

intense as later winter weather, they often catch sailors unprepared and cause damage for this reason.

The most difficult navigational conditions occur in winter. The prevailing northerly bora winds may reach 41 to 47 knots and cause early morning temperatures to drop to near freezing, with little warming during the day. The most hazardous conditions are initiated by migratory cyclones approaching from the west, accompanied by low clouds, heavy rain, high winds, and reduced visibility. As they pass over, winds may shift abruptly from northerly, to easterly, southeasterly, and finally southwesterly with ever increasing wind speeds. These storms produce waves of 3.3 to 4.3 meters, in which case watercraft anchored outside the sheltered bays are fully exposed to squalls and battering waves.

Kapsali Bay, like any other Aegean landfall, presents distinctive local characteristics due to its geographical location, exposure, and configuration, while at the same time experiencing a typical range of seasonal conditions generated by the interplay of the broader environmental forces examined in this chapter.

Implications of the Environment for Aegean Navigation

The foregoing examination of the maritime environment of the Aegean region highlights several implications for Bronze Age seafaring. One of these is that although there are certain broadly predictable patterns of climate, weather, and conditions at sea, these can turn unpredictable and changeable at the scale of human experience. The sudden squalls, storms, and heavy seas reported from antiquity to the modern day often arise with little warning even when the general patterns of hazardous weather are well known. The captains of the Persian fleets, with their imperfect knowledge of local conditions along the western Aegean coast, learned this to their cost. Apart from weather hazards lasting for a few hours to a few days, longer-term anomalies arise because the circulation of air and water in the Aegean is governed by systems operating at multiple, interacting scales. The more extreme case of Europe's "Little Ice Age" shows that centuries-long environmental shifts are possible.

We can assume that similar kinds of anomalies, at least those of short duration, occurred during the Mycenaean period, though we

have no empirical evidence for them. A great deal of speculation has surrounded climatic disturbance, usually a decadal-scale pattern of drought, as a possible contributor to the collapse of the Mycenaean palatial system (Carpenter 1966), but our data – whether from pollen, tree rings, ice cores, terrestrial and deep-sea sediments, or other proxy measures – lack sufficient geographical and chronological resolution to demonstrate this or indeed any specific environmental anomaly during the Mycenaean period. The most we can say is that by the mid-Holocene (roughly 5000 BC), the basic climatic conditions that we experience in the Mediterranean area today were in place (Loy and Wright 1972: 40; McCoy 1980), and global (eustatic) sea level had stabilized at just a few meters below current levels (Lambeck 1995, 1996). It is likely, therefore, that the environmental anomalies of recent centuries, for which we have historical accounts and some meteorological data, approximate those encountered in the LBA. This means that Mycenaean sea captains faced weather-related hazards similar to those encountered by their later counterparts prior to motorized watercraft and advanced navigational aids.

The winds and currents described in this chapter also made it possible for boats – whether paddled, rowed, or sailed – to make progress on the sea. These movements normally followed the prevailing winds and sea currents, but knowledge of local winds, coastal currents, and land and sea breezes often made it possible to move against the dominant forces in short segments. This ability to move about locally also broadened the horizon of maritime activity by extending the sailing season, and significantly promoted the kind of short-distance connectivity that led to the formation of the maritime “small worlds” to be described in Chapter 7.

Equally important to Mycenaean navigation were the topographies of coastal landscapes. These were normally stable over the scale of a human lifetime, though as we will see in Chapter 5, modern coastal configurations are often dramatically different from those of the Bronze Age. Working in favor of Mycenaean navigators were the thousands of islands and highly irregular coastlines of the Aegean, indented with an abundance of natural harbors and anchorages. It was possible to traverse most of the Aegean, and in fact much of the eastern Mediterranean, with land always in sight, the main exception being the Libyan Sea between Crete and northern Africa (Fig. 4.9). When bad weather conditions arose, some form of safe anchorage was usually within reach, but it must be emphasized that the hazards of

shallow coastal waters, if not known to the crew or in adverse weather, could be just as dangerous as running out to the open sea. Because suitable landfall was rarely more than a day's travel from any harbor within the Aegean, there was little need for night voyaging unless one left the Aegean Sea proper (by choice or when blown off course).

For these reasons, coast- and island-hopping facilitated movement by sea in the Aegean, and travel by sea was bound to play a fundamental role in the development of early Greece. The evolution of navigational skills is apparent in the archaeological record (Papageorgiou 2009: 199–200). Beginning with indirect evidence of sea travel in the presence of Melian obsidian at Franchthi Cave in the late ninth or early eighth millennium BC,³ subsequent millennia saw traces of inhabitation on several islands and the colonization of Crete in the seventh millennium. Over the following 3,000 years, Aegean islands and mainland coastlines were gradually settled, until during the EBA (third millennium), proto-urban settlements and dense maritime communications were established (Broodbank 2000; Cherry 2004). These networks, along with technologies including the sail, were well developed by the time the Mycenaeans emerged as a complex society with ambitions beyond the Greek mainland.

The omnipresence of coasts and islands was also a hindrance to safe navigation, however, and this was a fundamental condition for the formation of navigational techniques in the Aegean. The quote that opens this chapter, taken from a twentieth-century sailing manual, succinctly makes the point that navigating the Aegean was more a problem of pilotage through complex coastal and near-coastal topographies under the influence of varied environmental conditions than a matter of celestial navigation, dead reckoning, or other means of way-finding on the open sea. Thus, despite the obvious advantage of constant visibility of land, knowledge of local coastal conditions was paramount to ensure safe passage and landfall. Ancient texts are replete with stories of ships run afoul of coastal hazards while trying to make safe landing. To cite an example, one of the misadventures of St. Paul's long sea journey from Palestine to Rome was shipwreck on the coast of Malta (*Acts of the Apostles* 27.6–28.10). After being blown off course from Crete for several days by a raging storm, the ship's captain spied a bay with a sandy beach on the Maltese coast, but on approaching, the ship ran aground on a sandbar, became wedged, and was destroyed by the pounding waves. Such disasters as befell the Persians in 492 and 480 BC or St. Paul in the early years of the Roman

Empire were undoubtedly common, and underscore not only a general need for knowledge of local conditions – or better perhaps to highlight the consequences of not having that knowledge – but also support the argument for the prevalence of short-distance connections among those with local experience, leading to the formation of maritime “small worlds.” A detailed examination of coastal landforms and navigational conditions in the Aegean in [Chapter 5](#), along with case studies in [Chapter 7](#), will permit these arguments to be developed in full.



4.9 Visibility of land from the sea in the Mediterranean. After Broodbank [2000](#): 40, fig. 4.

These peculiarities distinguish the Aegean from other seas with which it is often compared. For example, ethnographic accounts of navigation among aboriginal South Pacific islanders are often found appealing as comparative material because they offer detailed studies of navigational techniques that do not rely on modern instruments or advanced seacraft, not to mention insights into maritime communities and their social and economic links with similar communities both near and far. Among these insights is a better understanding of how a pre-literate society can develop and disseminate sophisticated systems of navigation based on detailed observations of celestial bodies and other environmental features.

Yet although many of these insights are useful and even compelling, fundamental differences must be kept in mind. Broodbank ([2000](#): 38–43) examines the similarities and differences of low-technology voyaging in the Mediterranean, Caribbean, and southwestern Oceania. In spite of comparable challenges inherent to small wind- or human-

powered craft, and even some similarities in social and economic organization, Broodbank points to fundamental differences between the Cycladic Islands of the Early Bronze Age and these other areas. One of these is the basic geography of the island chains. In the South Pacific, islands are much more isolated, separated from one another and from any continent by great distances with a seemingly boundless sea intervening. These geographical factors have had a profound effect on the way that social and economic relationships developed over time among the scattered island communities. To a much greater extent, the proximity of Aegean islands to each other and to continental land masses created a profusion of potential maritime routes and situated coastal communities within range of recurrent external influences.

To Broodbank's observations we might add that a very different kind of navigational skill was required for a navigator departing in a small sailing canoe from one tiny Pacific island for another, often hundreds of nautical miles away. The main objective was to avoid missing a tiny speck of land in a vast sea, since the consequence of deviating even a few degrees off course might be to be lost in the open sea. Indeed, from time to time, canoes departed, never to be seen again. Other voyages turned into long adventures of missing the target (due to navigational error or inclement weather), only to turn up at some other island, where the errant crew might remain for a time before returning (Feinberg 1988: 25–31). Most such voyages were successful, however, and to make this possible an elaborate and complex system of navigation using celestial observation of the movements of the sun and stars was developed, partly independently and partly through shared traditions, by many island societies in the South Pacific (Feinberg 1988: 87–118; Gladwin 1970: 145–213; Thomas 1987: 73–85). By contrast, so long as the Mycenaeans were traveling within the Aegean, Ionian, or Adriatic Seas, or along the coasts of the Levant or southern Asia Minor, they could choose to avoid the open sea, instead navigating by coastal and island landforms and relying on their knowledge of safe anchorages en route.

This is not to say that Mycenaeans did not undertake open-sea voyages, or that they were ignorant of celestial navigation. Within the Aegean, ship captains often had a choice between a circuitous coastal route and a more direct open-sea voyage. The decision involved considerations of the ship's structural fitness and equipment (sailing rig, oars, crew, provisions, etc.), the captain's and helmsman's experience, the expected environmental conditions (winds, currents,

weather), and the urgency of a speedy arrival (McGrail 1991: 88–89). These dilemmas figured prominently in the return of the Homeric heroes from Troy (McGrail 1991: 88). After arriving on Lesbos, Nestor, Diomedes, and Menelaus debated two island-hopping routes for their return to the Peloponnese, one sailing through the narrow channel between Chios and the Anatolian coast before turning west to the northern Cyclades and thence to Euboea and Attica; and the other keeping west of Chios between that island and Psyra before also turning west to the Cyclades and beyond. Nestor, after inquiring of Zeus, chose instead a direct open-sea voyage to the southern coast of Euboea, keeping Psyra to port (*Odyssey* 3.169–79). Interestingly, none of these routes is favored by winds or currents, yet Nestor reports that his ships, taking the open-sea route, were able to run before a freshening wind astern, reaching Karystos in southern Euboea by dawn the next day. The route ostensibly favored by environmental conditions was long, possibly involving a crossing toward Skyros in the northern Sporades before turning south to catch the prevailing winds and currents along the eastern coast of Euboea. Matching environmental expectations more closely is a journey found in Odysseus’ phony tale of his youthful exploits on Crete (*Odyssey* 14.252–57), in which he describes a plausible sea voyage from Crete to Egypt, riding a northerly wind down the lee side of Crete and arriving at the Nile in just over four days. The journey from the Aegean to Egypt illustrates the fact that when ancient ships left the familiar confines of the Aegean, they encountered extended periods of days (or even weeks if things went wrong) in the open sea, often out of sight of land. Because these trips involved sailing at night, some means of staying the course was necessary. Homer’s sea captains were familiar with stellar navigation: after leaving Calypso’s island, Odysseus set a course for seventeen days with reference to the Pleiades, the “late-setting Ploughman” (*Arctophylax*), *Ursa Major* (our Big Dipper), and Orion (*Odyssey* 5.270–77). There is an important difference between the use of prominent stars and constellations to determine orientation and rough geographic position, and the Pacific Islanders’ technique of “star path steering,” which relies on an intimate knowledge of the rising and setting azimuths of numerous stars, as well as the ability to correct for winds and currents en route (Davis 2002: 298–99). There is no evidence in the Homeric text that Odysseus used this technique in his voyage from Calypso’s island (Davis 2002: 299–300).

The fact that night sailing by means of celestial navigation was reasonably well established by the time Homer’s epics were set to writing, circa 700 BC, is no proof that Mycenaean sailors were

similarly capable more than a half-millennium earlier (McGrail 1991: 89). Indeed, many modern scholars are skeptical of LBA celestial navigation (e.g., Chryssoulaki 2005: 79; Lambrou-Phillipson 1991: 13). Yet there are reasons to believe that such knowledge already existed in the Bronze Age. Christos Agouridis (1997: 17) develops an argument in favor of celestial navigation in the Aegean Early Bronze Age that, although lacking direct archaeological evidence, is in many respects compelling. The material evidence that is preserved reflects intensive engagement with the sea by EB II, including a proliferation of fortified coastal settlements and the movement of goods by sea throughout the Aegean. Given that the most sophisticated sea-going vessel of the period was the paddled longboat with a maximum daily range of 40 to 50 kilometers (Broodbank 2000: 102), some journeys must have involved overnights on the sea. Meanwhile, a novel suite of iconographic symbols related to sea, sky, and maritime travel emerged in the Cyclades in EB II (Broodbank 2000: 249–53, fig. 81). The ceramic “frying pans” of Syros type carry incised depictions of longboats, fish, sun/star symbols, and abstract “sea spirals” that probably represent billowing waves. The co-occurrence of incised fish, sea spirals, and a sun/star on an early frying pan from the Louros Athalassou cemetery on Naxos (Fig. 4.10) is suggestive of celestial navigation. Adding to the material evidence, Agouridis invokes ethnographic parallels of widespread celestial navigation and open-sea voyaging among Pacific and Caribbean islanders to argue that people engaged intimately with the sea and making long sea crossings will naturally observe the position and movements of heavenly bodies and realize their potential for tracking one's location and destination, likely out of necessity while on the sea at night.

The contrast between seafaring as presented in the Homeric epics and as known from archaeological evidence of the LBA eastern Mediterranean may shed further light on the question of celestial navigation. Jan-Paul Crielaard (2000) observes that long-distance maritime relations in the LBA were far greater in scale, more complex in organization and infrastructure, and served a wider range of exchange relationships than those depicted in the *Iliad* and *Odyssey*. The dense networks of trade in raw materials and finished goods, the elaborate harbor facilities of Egypt and the Levant, and the long-distance political relationships among the great states of the eastern Mediterranean had largely evaporated in the Early Iron Age, and do not figure in the epics. Crielaard's principal aim is to show that seafaring provides additional support for the argument, widely accepted today, that the world of the Homeric epics should be situated close to Homer's own time, if to any historical period at all (Bennet

1997; Morris 1997). But another implication of his arguments can be expressed as a question: If long-distance seafaring was better organized and more sophisticated in the LBA, would it be surprising to learn that Mycenaeans sailed at night and navigated by the stars, as did Homer's sea captains? The Homeric texts, together with iconographic evidence for a gradual development of the oared galley from late Mycenaean times to the Geometric period (see [Chapter 3](#)), do not imply significant technological progress. Although this is not conclusive proof, I am inclined to agree with Agouridis (1997: 17) that the use of celestial navigation for nighttime voyages on the open sea is virtually certain for the Aegean Bronze Age. Moreover, it may be that there was a division in Mycenaean maritime societies between master navigators, able to steer ships on long open-sea journeys by celestial navigation, and those whose knowledge was limited to local and daytime trips. This would parallel the recent situation in the South Pacific, where most ocean travel occurred within a short distance of a given island and the majority of men became adept at it, but only a handful achieved the level of navigational skill required for long open-sea journeys (Feinberg 1988: 88–91).



4.10 Sun, sea spirals, and fish incised on an Early Cycladic frying pan, Louros Athalassou cemetery, Naxos. © Hellenic Ministry of Education and Religions, Culture and Athletics/Archaeological Receipts Fund. Courtesy of the National Archaeological Museum, Athens.

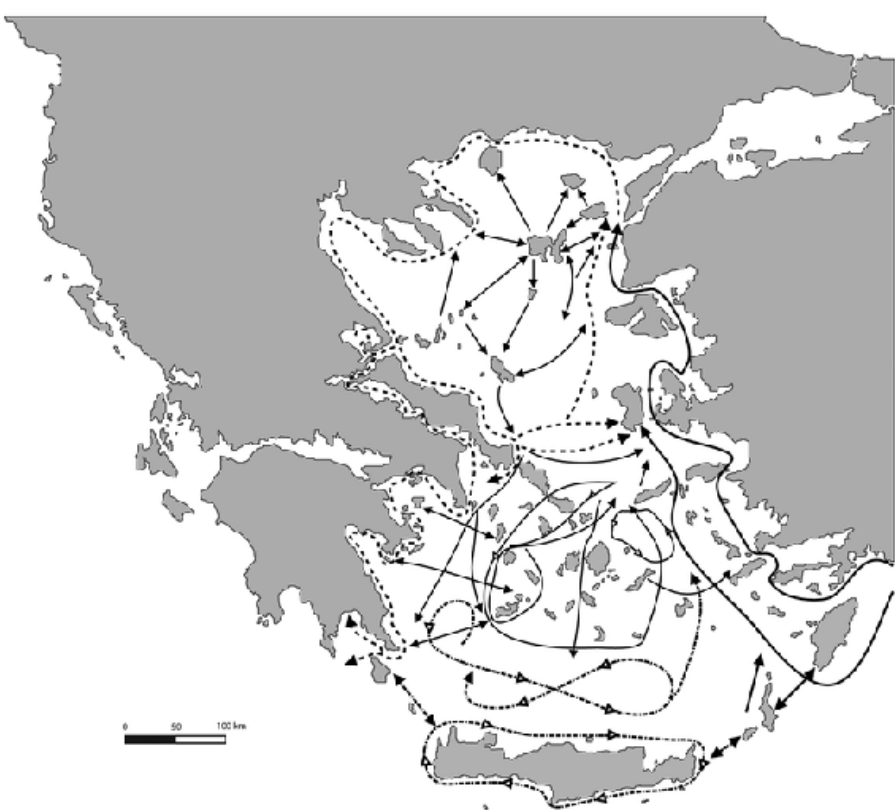
Even when Mycenaean captains chose to avoid open-sea voyaging when possible, it does not mean that their vessels hugged the coast too closely (Mark 2005: 139–42; Morton 2001: 143–72). Apart from the navigational hazards, known or unknown that lurked in coastal waters (pilotage along a coastline at night was particularly dangerous), the purpose of a voyage affected the desirability of a coastwise route. There might be little reason to stray far from shore for fishing excursions, or for visits to nearby coastal communities for social or trading purposes. Longer trading voyages involving multiple stops en route to buy and sell goods might also necessitate a coastwise, harbor-to-harbor strategy in which the vessel traveled a safe distance from the coast, but could quickly make for a harbor or anchorage to trade or to find shelter. In this case, the route reflected not fear of open-sea voyaging, but economic sense. As mentioned above, ships traveling near-coastal routes might also take advantage of coastal breezes and currents to make headway with or against prevailing winds. On the other hand, when the intention was to travel quickly from one place to another with little interest in intervening locations, a direct route over open sea was often preferable if environmental and human conditions permitted.

Sailing Routes in the Aegean

Although the proximity of myriad islands and coastlines presented almost unlimited hypothetical routes crisscrossing the Aegean, certain dominant and habitual routes may have emerged over time. There can be little doubt that environmental factors strongly influenced the routes that sea travelers followed around the Aegean in the Bronze Age. Winds, currents, topography, and seasonal weather patterns combined with technologies of shipbuilding, propulsion, and navigation to give shape to a range of possible routes and seasonal schedules. If these factors were sufficiently determinative, certain well-traveled sea lanes could be formalized over long periods of time, with a consequently strong impact on the pattern of social relations. Here a crucial question arises: Did environmental forces play a determining role in coastal settlement patterns, and even in maritime social relations? That is, did coastal communities arise or flourish because they were positioned advantageously with respect to sea paths favored by environmental forces such as winds and currents? Further, were their external relations patterned, or even determined, by movement along these favorable routes? If so, it should be possible

to create a simple predictive model for the existence of significant Bronze Age coastal settlements at well-placed nodes along these routes.

Models that emphasize the role of environment on the formation of maritime networks in the Aegean Bronze Age have often been proposed, perhaps most cogently in recent years by Agouridis (1997) and Despoina Papageorgiou (2008, 2009). This approach has generally involved creating maps of hypothetical sea lanes based on environmental factors, particularly currents and/or winds, and then plotting the known archaeological sites for a given period to assess the fit between these two sets of data. Agouridis (1997: 6–15) shows how the currents and winds may have facilitated the dense connections implied by the archaeological evidence. He stresses that proximity can be misleading: islands close to one another but separated by rough seas may have had little contact (Agouridis 1997: 19). Papageorgiou strongly emphasizes the role of sea-surface circulation, determined by wind- and density-driven sea currents: “It is clear that the sea circulation contributed decisively to forming the routes of prehistoric ships in every direction, and to establishing sea lanes between all the mainland coasts and the Aegean islands” (Papageorgiou 2009: 204). On the basis of sea circulation patterns, she proposes six principal Aegean sea routes, with numerous potential subroutes (Fig. 4.11). These include both open-sea and coastal routes, since Papageorgiou believes that open-sea and off-season travel were practiced whenever and wherever environmental conditions were permissive. Having established these routes, Papageorgiou examines the archaeological evidence for site location and activity in the Neolithic and Early Bronze Age. She concludes that prehistoric coastal settlements “... were invariably founded on small promontories and peninsulas, close to protected bays and safe anchorages,” and “...located at crucial points on the sea lanes” (Papageorgiou 2009: 216). On a larger stage, winds and currents are generally believed to have dictated a counterclockwise motion to long-distance trade in the eastern Mediterranean in the Bronze Age (Fig. 4.12).



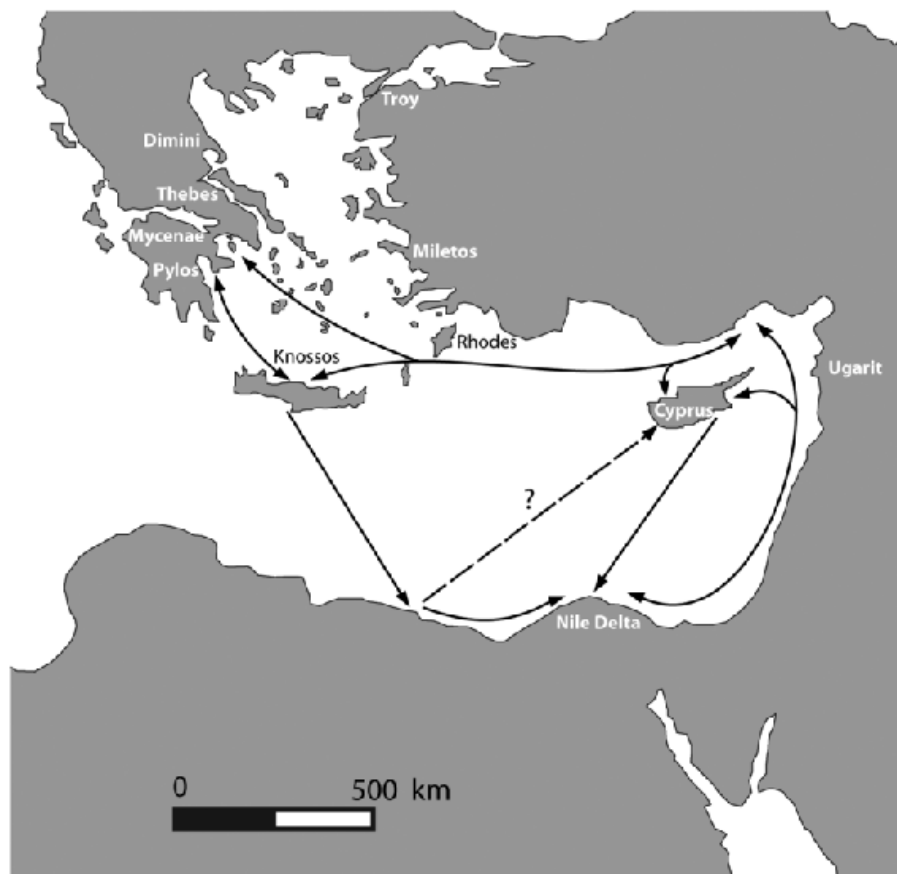
4.11 Hypothetical Aegean Bronze Age sea routes. After Papageorgiou 2009: 210, fig. 4.

Yet cultural factors may have figured more prominently in the establishment and evolution of maritime connections than allowed in these reconstructions. In [Chapter 3](#), we saw how the introduction of the sail in the Cyclades at the end of the Early Bronze Age may have initiated a reconfiguration of prominent coastal nodes and the networks they served (Broodbank 2000: 347–49). Indeed, Broodbank has injected a stronger cultural element into the formation and configuration of maritime cultural networks in the prehistoric Aegean. He maintains that the mutability of environmental conditions and social and economic relations “...makes it unlikely that prevailing currents and winds would determine the locations of maritime centres,” and further that “[i]t is more likely that social geography in combination with technological parameters for early seafaring defined such centres and fashioned the sea-paths linking them” (Broodbank 2000: 94). From this perspective, environment, technology, and society converged in various ways to favor or hinder maritime connections in the Bronze Age Aegean. Among the conditions motivating such connections were kinship relations; demographic

needs for exogamy and labor sharing; unequal resource distribution, which presented opportunities for exchange and possibly led to “social storage” arrangements among communities to buffer against resource failure; inter-elite relations; and mutual protection against predatory raiding. This view aligns closely with Peregrine Horden and Nicholas Purcell's (2000) examination of historical interaction patterns around the Mediterranean, which reveals countless cases in which human tendencies to connection and mobility trump the ostensible constraints of topography on land and environmental conditions at sea. These connections then come to define regions of different scales and types, which are shaped as much by social as environmental imperatives. Thus, it is plainly inadequate to map maritime interactions based solely on environmental factors. It is the human response, operating within the opportunities and constraints of natural environment and socioeconomic milieu, which is decisive. Seafarers may develop innovative technologies (e.g., the sail) to alter the relationship between human and environment in their favor, or they may forge connections in spite of environmental challenges by finding ways to work around the more prohibitive obstacles. Once set in motion, maritime connections can create a cumulative history that serves to perpetuate relationships regardless of whether or not they reflect economic or environmental logic through changing times. For this reason, unraveling the history of particular connections can be revealing about how relationships among people and communities may persevere in spite of the vagaries of time.

One way to take these ideas further is to think in terms of a feedback or dialectical relationship between environmental and cultural variables, an *Annales* history in which the relationships of humans with the sea, and with other humans across the sea, unfold over different scales of time and space (Braudel 1972). Building on the data discussed so far, we might propose that the parameters of seafaring involve the interplay of long-term structures of the *longue durée* (timeless circulation patterns that create the Mediterranean maritime climate, simple technologies of shipbuilding and navigation), medium-term patterns (conjunctures) of the *moyenne durée* (major climatic oscillations, technological innovations in boat construction and navigation, political and economic relationships on the scale of centuries), and historically contingent *événements* that may be single events or short-term developments (collapse of the Mycenaean palaces, colonial forays, wars, short-term climatic variations). Johan Rönby (2007) calls these “maritime durées” and proposes that it may be possible to identify experiences and *mentalités* unique to coastal inhabitants around the world and through time, an observation that is

incorporated into the concept of *coastscape*, developed in [Chapter 6](#).



4.12 Hypothetical long-distance sea routes in the eastern Mediterranean. After Wachsmann [1998](#): 296, fig. 13.1.

Scale affects historical trajectories in distinctive ways. The analytical focus advocated in this book on local-scale interactions owes a debt to Horden and Purcell's emphasis on the durability of short-distance interactions among “microregions,” with considerably more unstable linkages to the shifting fortunes of supraregional entities. This emphasis results in a very different history from the traditional “Great Men and Battles” version, but one that reflects more faithfully the true rhythm and full scope of Mediterranean life. One of these alternative histories can be written about short-distance maritime connections, which offer a fundamentally different view from the great interregional trading routes on which most scholarship has focused. Although rarely studied, maritime small worlds of the

Aegean Bronze Age offer a window on long-lived, though not necessarily unchanging or even stable, interactions. The durability of short-distance relations results from several factors that are typically absent in large-scale, cross-cultural contacts: (1) they are easier to maintain from a practical point of view, since distances and environmental obstacles are less inhibitive; (2) they are often founded on long-established and deeply embedded social ties; and (3) the communities they bind may be less susceptible to changing political fortunes if they lie outside the mainstream of momentous historical events. By contrast, interregional connections are more vulnerable to environmental and political forces, and are the first to be broken in turbulent times.

In effect, the analysis of maritime small worlds compresses space while expanding time. It is therefore possible to build a diachronic narrative of continuity and change in which small worlds are the focus and larger power centers and spheres of influence move into and out of view over time. The intent of this exercise is not a return to historical particularism, but rather on the one hand an interest in these people and places in their own right, and on the other a desire to assemble robust data in the service of regional-scale archaeological reconstructions, as well as comparative models that may embrace scales from regional to global (e.g., Parkinson and Galaty 2007; Wright 2004). Too often, these reconstructions and models have a flimsy foundation in data or rely on data sets that are not comparable. By building up from many well-documented local settings, we are better able to clarify their political and economic role in larger webs of interaction, and to analyze the nature and limits of influence wielded by power centers in peripheral areas (Tartaron 2010). Taking advantage of the benefits of this shift in perspective for the Mycenaean period relies on a comprehensive and interdisciplinary examination of the archaeological and environmental record.

Bronze Age Navigation in Practice: Navigational Aids

In the previous section, we established the vital nature of coastal pilotage for navigation in the Aegean. Pilotage was aided both by physical features that marked out maritime routes, warned of dangers, or promised safe haven; and by a body of maritime wisdom about them that systematized knowledge into practice. Let us first specify the aids that might have been available to Mycenaean navigators, and then consider how knowledge of their existence and use was

transmitted over time.

The terminology describing navigational aids can be confusing. The terms *landmark*, *seamark*, and *skymark* would seem to indicate navigational cues existing on land, sea, and sky, respectively. This is exactly the usage adopted here, disregarding the more expansive definition of seamark that one often encounters, which includes all features that can be seen from the sea (Table 4.1). The specific combination of marks relevant to a given voyage cross-cuts these categories according to the nature of the travel: long distance or short run; day or night; coastwise or open sea; planned or opportunistic journey; familiar or unfamiliar routes; friendly or hostile waters; fair or foul weather. A local trip from one coastal community to another might require knowledge of only a few coastal hazards and landmarks, while a voyage of some length could involve a great many of these navigational marks and a much greater store of knowledge and navigational skill. A sea captain leading a Mycenaean trading mission from the Argolid to Knossos on Crete would have called upon his knowledge of winds, currents, islands, and celestial bodies, as well as a solid knowledge of Cretan coastal topography, wind conditions, and coastal settlements.

Table 4.1. Navigational aids potentially available in the Bronze Age. Artificial constructions are shaded.

Land	Sea	Sky
Mountains	Islands	Stars
Cliffs	Shoals	Sun
Other distinctive topographic shapes	Protruding rocks	Cloud types and formations
Striking colors of rocks, vegetation	Wave patterns	Wind direction and speed
Beach strands	Water color	Smoke (natural fires)
River mouths	Water odor	Smoke (settlement or signal fires)
Settlements	Seabirds	
Towers, cairns, tomb mounds, and similar	Fish species	
	Breakwaters, jetties, mooring posts, and similar	

Landmarks

Mountain ranges or peaks with distinctive shapes served as good general markers for staying on course, since they were visible from great distances. For more precise delineation of routes, however, sea cliffs and headlands were particularly useful. In historical times, as recorded by Strabo and others, prominent headlands functioned as

nodes in longer journeys conceived in terms of multiple headland-to-headland segments (Morton 2001: 186–88). Thus, one such voyage in the northern Aegean was defined as a series of headlands (Poseidonion, Sepias, Kanastron, Nymphaion, Akrathos) separating the intervening gulfs (Maliac, Thermaic, Toronaean, Singitic, Strymonic; Strabo, *Geographica* 7.fr. 32). Because of their high visibility and vital role in seafaring, headlands have been favored locations to place various kinds of manmade landmarks meant to be seen from the sea. As early as Homer, conspicuous burial mounds were placed on headlands at the Dardanelles (for Patroclus: *Iliad* 7.85–91) and at Circe's island (for Elpenor: *Odyssey* 11.71–78). An archaeological example is the erection of large cairn-like structures, which may have taken the form of tall towers before their collapse over time, on high coastal ridges of the northeastern Peloponnese in EH II (Tartaron, Pullen, and Noller 2006; Tartaron et al. 2011: 626). Such structures could have been fitted out as lighthouses or signal stations, but this is mere speculation. Apart from their potential as conspicuous landmarks, the monumentality of their construction may have warned off those with hostile intent. Whatever the original motivation for constructing mounds, cairns, or in later times, temples on coastal promontories, they served both to advertise and to provide useful navigational markers to passing vessels. In certain periods of particular orientation to the sea, for example EH II and LH III, settlements might be found on coastal promontories, but it was often not practical to settle on them, sometimes for reasons of defense, but more often due to untenable distances to water and arable land. Nevertheless, promontories are primary locations to search for traces of ancient structures related to maritime activity.

Many coastal promontories or sea cliffs were distinctive for their unusual shapes or striking colors. In historical times, these were defining properties of such topographies, giving rise to place names incorporating colors (e.g., *leukos* for white, *melanos* for black, *erythros* for red) or animal shapes (e.g., *Kynosoura* for dog's tail, *Onougnathos* for ass's jaw). A crystalline limestone sea cliff, shining brilliant white in the sun, could be a striking and easily recognizable marker along a sea route; the pervasive limestone geology of the Greek mainland explains the widespread occurrence of forms of *leukos* for coastal landforms. Naming prominent features along a route transformed space to place; once a place is named and described, it becomes part of the known world and thus less terrifying than a vast, unfamiliar sea. Regrettably, for the Bronze Age we have only the place names from the Linear B tablets and a few other likely Aegean toponyms from Egyptian and Hittite sources. Of these, only a few belong

demonstrably to coastal locations and none seems to refer to an evocative coastal landform.

Of crucial navigational importance were the coastal features that pointed toward safe haven, supplies, and trading or raiding opportunities. Long beach strands, river mouths, estuaries, and embayments formed a constellation of potential stopping-places en route, but these landmarks had to be supplemented with knowledge of the characteristics of the shallows to be negotiated to reach them. Human settlements were situated in many of these places, visible in the structures of buildings, walls, roads, and cemeteries; the disposition of their inhabitants toward visitors from the sea had also to be taken into account.

Seamarks

Like mountains, islands aided in keeping a ship on course, and literary evidence from Homer forward portrays navigators steering by keeping specific islands to port or starboard. Islands, of course, possess features both of landmarks and seamarks; all the landmarks enumerated above could be found on islands. Yet a long maritime tradition beginning with Homer characterizes islands as objects protruding from the sea that often possess a capacity for motion or floating not attributed to continental land masses.

On the open sea, wave patterns, driven by sea currents and winds, indicated general direction as well as developing weather conditions. While land was still out of sight, observations of fish could distinguish deep-sea from shallow-water species, and sightings of seabirds might permit an estimate of their typical ranges from land. Upon reaching inshore waters, to avoid danger crews had only a sounding lead or pole as an instrument to augment the information they could collect visually and their prior knowledge of local bathymetry and topography. Visual indicators of submarine features included breaking and deflected waves, protruding rocks and shoals, and water color and odor. Waves breaking far from shore indicated a shallow approach and the need for caution to avoid running aground on a shelf or invisible rocks. Changes in water color, typically from deeper to lighter shades of blue, indicated movement into shallower waters, as did the odor of waters permeated with coastal sea plants and animals, and often commingled with fresh water from estuaries, river mouths, and springs.

Human constructions on the sea, including breakwaters, jetties, and mooring posts, were recognizable infrastructural elements of harbors in ancient times. Yet it remains to be demonstrated that Mycenaean built any of these, in contrast to the built features of contemporary Egyptian or Mesopotamian river harbors, or even the near-shore ship sheds that the Minoans built at Kommos and other sites (Shaw 1985; Shaw and Shaw 1999; see [Chapter 5](#)). Nor is there any indication that buoys or other channel markers were used in the Bronze Age.

Skymarks and Celestial Bodies

In addition to the use of the sun and stars for navigational purposes, as argued above, other celestial signs were available to aid Bronze Age mariners. Wind direction could be matched to known regional or local winds to ascertain general orientation, and wind speed might portend heavy seas or oncoming gales. Darkening skies and clouds were also important indicators of impending conditions at sea. The sudden disengagement of low-lying banks of clouds from the summits of islands and coastal mountains may portend strong winds or gales (USNHO 1952: 12). On Crete, the summer meltemi is often heralded by “a fleecy bank of white clouds” enveloping the summit of Psiloriti and neighboring peaks (USNHO 1951: 116), and further west the appearance of “long black, sausage-shaped” clouds over Cape Drepanon in winter is a sure sign of the onset of a heavy southeastern gale, accompanied by rough seas and a long, heavy swell (USNHO 1951: 139). Sometimes, these massive banks of clouds pointed toward land masses that were not yet visible.

Smoke from fires of diverse origins might also come into view before land was sighted. Forest fires of natural origin occur periodically, as part of a healthy cycle of vegetative death and regeneration. Anthropogenic fires associated with settlement activities included cooking and heating at the domestic hearth, burning in agricultural fields and pastoral complexes, and industrial activities such as pottery firing and metal working. Accidental fires at settlements were also common, set off by lightning or the careless handling of an oil lamp. Signaling by fire or smoke or even the use of rudimentary lighthouses set up on cairns was possible in the Bronze Age but there is no evidence of formal lighthouses in Greece until the late Classical period (Mark 2005: 160; Morton 2001: 212). The use of fire for everyday activities was inevitable and must have made it difficult for any coastal settlement to conceal itself behind a ridge or

in a hidden valley.

Phenomenology of the Voyage

To our knowledge, Bronze Age navigators did not possess maps and charts, so how then can we describe the mental process of the voyage? Often, the navigator is said to have carried “mental maps” or “cognitive maps” of the desired route and its features (Frake 1985; Lewis 1976; Oatley 1977). This notion has been criticized by Alfred Gell (1985) as flawed and inadequate, in an argument that is to some extent semantic, focusing on what we mean by *map*, but with interesting substantive implications. Gell distinguishes *map* from *image*: the former refers to a model of reality in Cartesian space, showing all of the possible routes and territories that could be encountered, but without the point of view of the sailor and with no particular sequence of movement indicated. Gell asserts that navigators in mapless societies do not call up cognitive versions of such all-inclusive devices (it would be anachronistic to claim that they do), but rather they work from a compendium of images that constitutes a perspectival experience of the seascape. The actual mental process combines knowledge of fixed spatial relationships of landscape features (referred to by Gell as “non-token-indexical” statements or beliefs) with a constant monitoring en route of the ship's relative position (“token-indexical” statements or beliefs). For instance, “Chios is south of Lesbos” is a non-token-indexical statement (i.e., it is assumed to always be true and does not depend on where the ship is currently located), while “The ship is currently passing Chios, so it must be south of Lesbos” is a statement that may be true for some part of the journey, but depends on the ship's position relative to these fixed features. If one's final destination is Lesbos, this token-indexical determination permits decision making and the action of setting or maintaining a course to the north. Navigational success is secured by knowledge both of the fixed relationships between known places, and of one's relative position among them, and Gell views these as distinct but complementary cognitive processes.

If these relationships have a form more like a series of mental images than a Cartesian map, then the knowledge and the mental process can be described as phenomenological, experiential, and embodied, but here an important distinction must be made. Gell explicitly critiques Pierre Bourdieu's “practical mastery theory” (Bourdieu 1977: 2), an early phenomenological perspective on

landscape that proved a fertile source for the development of the postmodern phenomenologies of Christopher Tilley and others (Bender 1993; Tilley 1994). Bourdieu envisions the landscape not as Cartesian map space, but as a “practical” space that constantly morphs in response to the shifting perspective of a subject moving through it. In this kind of subjective, embodied experience, there is no objectively definable landscape, but instead a myriad of landscapes – both tangible and intangible – come into being through the contingent experiences of each individual subject. Practical mastery of maritime routes would involve committing to memory a series of images of landscape features from point of departure to destination, and then linking them en route. Gell rejects this relativistic view of landscape, insisting that landforms have a reality (spatial, substantive) independent of our momentary perceptions of them. Landscape change lies in the realm of geology and other longer-term processes; the change that occurs during a sea voyage is rather our position relative to these fixed features, so we must have external, fixed reference points in order for decisions based on our relative position to make sense. In Gell's phenomenology, the navigator's mental process is to refer to a kind of non-Cartesian mental map consisting of known features in fixed spatial relationships; in order to use this information, he must “match the images produced at particular map-coordinates with perceptual images of the surrounding terrain” (Gell 1985: 282).

To this point, the discussion of phenomenology has concerned one type of voyage only, albeit a common one: the daytime route that is known to a maritime community, but sufficiently long or complex to require aids to way-finding, such as mental maps and landscape images. The mental images that facilitated such journeys in the Bronze Age are likely to have been similar to those of later times in Homer and in the periploi of Archaic to Roman times: islands, headlands, rivers, bays, and other coastal features that functioned as nodes in segmented journeys and potential places of refuge.⁴

Yet there were several other types of sea voyages for which the mental processes and practices were quite different. One of these was the very short journey, along a coastline to a neighboring settlement or across a gulf, for which way-finding was unnecessary. Another type was the night voyage that relied on stellar navigation. Using stars and constellations to maintain general direction is much like using islands and headlands as landmarks, and this is precisely the way Odysseus was instructed by Calypso to navigate to the island of the Phaeacians

(*Odyssey* 5.270–77). By contrast, the star path steering practiced by the mariners of the South Pacific is tantamount to the creation of a Cartesian map of the heavens, which could be read like a modern road map. Finally, some voyages extended beyond the limits of the maritime world known to the navigator, as for example when a ship was blown off course or when pioneering seafarers ventured into unknown waters. In those situations, the crew had no references at all and were forced to fall back on their experience with landmarks, seamarks, and skymarks to travel safely.

Types of Maritime Communities in the Bronze Age Aegean

A fundamental assertion, which forms the basis for the archaeological reconstructions to follow, is that in the Bronze Age Aegean there were two distinct realms of maritime activity, entailing different levels of knowledge and experience. A basic, or generalized, realm of activity comprised short-distance travel not requiring advanced way-finding or environmental and social knowledge about distant locations and peoples. A broad range of fishermen, farmers, traders, and other coastal dwellers possessed the resources and skills to undertake simple trips to local fishing grounds, along adjacent coastlines, across straits and gulfs, and out to nearby islands. The risks of this kind of sea travel were comparatively minimal, and consequently harbors large and small must have been busy with small-boat, short-range activity.

A specific, advanced level of knowledge was essential for medium- and long-distance voyaging; medium distance is here defined as nonlocal, intrabasin (Aegean, Ionian) travel, and long distance as venturing beyond these basins. This was the realm of the master shipwright, the expert navigator and helmsman who commanded detailed information about seas and coastlines, and the crews trained in rowing and sailing. It was a subsociety organized in part to safeguard and transmit a body of nautical knowledge to the succeeding generation. Because such mastery was held by few, it often afforded preferential access to exotic goods, raw materials, and esoteric knowledge, and thus it could be a source of considerable social power.

Both generalized and advanced maritime knowledge persisted over long periods of time, the former largely “under the radar” of mechanisms of centralized control. The more specialized knowledge and performance of the professional mariner was of potentially great

interest to centralized political entities that depended on communication by sea. Thus at Pylos, personnel and ships were co-opted by the palace, whether to form state fleets or to work as private contractors in the service of the state. Yet the political centralization characteristic of EH II or the Mycenaean palatial period must be seen as a kind of periodic interlude in the more typically loose political structure of the Bronze Age and Early Iron Age. At most times, maritime communities must have operated independently or semi-independently. In the next section, the formation and perpetuation of the maritime knowledge of these specialized communities is examined.

Transmission of Maritime Knowledge and the *Habitus* of Maritime Life

Because for all intents and purposes LBA Greek society was pre-literate, the essentials of maritime life were communicated by word and by nonverbal demonstration. Several kinds of expertise were involved: shipbuilding and repair; techniques of paddling, rowing, and sailing; knowledge of the indicators of winds, currents, and weather; and detailed familiarity with a host of principal and alternative sea routes. Mastery of this body of knowledge was neither easily obtained nor commonly held in society; it required physical skills, mental powers of memorization as well as adept thinking in difficult situations, and plenty of experience on the sea. It was a specialized life and throughout recorded history, communities of seafarers have existed in various degrees of segregation from the rest of society. These maritime “closed communities” (Muckelroy 1978: 221–25, 240–42), “ship societies” (Adams 2001: 304), or possibly in the Mycenaean case a “galley subculture” (Wedde 2005: 33–36; see [Chapter 3](#)) formed alternative social entities that did not simply reproduce at smaller scale the wider societies of which they were a part. Indeed, a maritime community might look little like its host society: it might be exclusively male, and constituted by family or kin groups specialized in maritime pursuits. Although hierarchical relationships were essential aboard ship due to the hazardous conditions of seafaring, status in the maritime community might be achieved – according to experience and skill – rather than ascribed on the basis of social class, wealth, or kinship ties (Adams 2001: 305–306). Master sailors, navigators, and helmsmen would always have high status relative to less skilled and experienced crew members, as a matter of necessity.

Historical records and ethnographic studies provide many examples of multi-generational seafaring social groups with strong incentives to maintain and perpetuate the maritime closed community. The practical problem that so much information had to be learned and experience gained could best be addressed by beginning to inculcate knowledge at a young age, within the context of the family. Maritime knowledge was worth guarding as a potential source of power and independence. In early times, those with access to distant places with their exotic products and esoteric knowledge possessed a special, perhaps even mystical, status as Broodbank (2000: 289–90) suggests for the longboat voyagers of the EBA Cyclades (see also Helms 1988). The independence of maritime communities varied with the strength and interest of the state. In the Linear B tablets An 1, An 610, and An 724 from Pylos, we learn that the palace was able to levy ships and rowers from several villages in the last months of its existence. Similarly, in Viking-era Scandinavia, powerful families ruling proto-towns were able to outfit “levy fleets” with men from surrounding farmsteads and villages (Rönöby 2007: 75; Westerdahl 1992: 10). Yet in the Mycenaean period, and presumably in many other times and places, much of the coastline of the mainland and islands lay beyond the political reach of any palace state, and even within palatial territories, state control could hardly have been all encompassing, whether by force or accommodation. This does not imply that long-distance trade missions involving the acquisition of raw materials and luxury items from distant ports of trade necessarily lay in the hands of independent maritime communities, but short- and medium-distance social and economic sea travel must normally have carried on with little or no palatial interference. These traditions, and the connections they established, time and again outlived centralized states.

Because maritime knowledge was content heavy and complex, some means were needed to transmit a body of maritime knowledge within and across generations. Ethnographic studies of seafaring in the Pacific are a good point of departure, since they offer detailed reconstructions of maritime knowledge and its transmission in a nonliterate society. From a very young age, boys in these communities learn the basic skills of seafaring: they accompany family members on short voyages for fishing or visiting, they assist in the construction of canoes, and build toy models of them. In the Caroline Islands, youngsters begin to learn the complex system of stellar navigation through a series of game-like exercises designed to convey the key concepts and to train the mind for memorization and situational thinking. An instructional “star-structure” compass, representing the

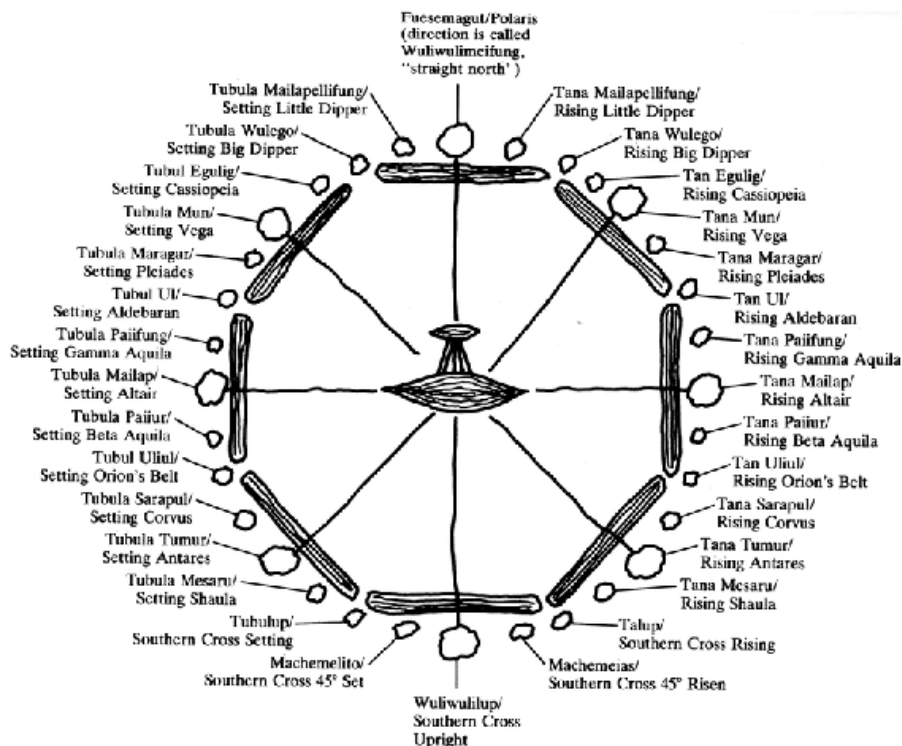
great circle of the horizon divided into 32 points where the stars are observed to rise and set, is assembled from simple materials such as stones, shells, and reeds (Fig. 4.13). Sitting together in a boathouse in the evening, experienced navigators guide novices through a set of rigorous exercises including the following (Goodenough and Thomas 1987: 5–7):

Island-Looking: In this memorization and orientation exercise, navigators drill pupils on the locations of islands by starting from an island and, moving around the compass, naming the places that lie in each direction. The exercise is then repeated starting from another island. Advanced students are able to name the locations of reefs, shoals, and other seamarks.

Sea-Knowing: In this exercise, students learn the sea lanes that lie between the islands and reefs by giving them names that refer to the rising and setting of specific stars that occur along them.

Sea Brothers: The student learns all the named sea lanes that lie along the same star compass coordinates. If a navigator forgets the star path between two islands, he may remember that the path is “brother” to another sea lane, and thus recover the forgotten coordinates.

Coral Hole Stirring: To reinforce the mastery of the star courses, this game imagines a chase sequence between a fisherman and a parrot fish. As the fisherman probes a hole in the reef at a given island, the fish darts off to a neighboring island, then another, and so on until eventually returning to the starting point. Each hole has a name that substitutes for the name of the island.



4.13 Example of a star-structure compass, Caroline Islands, Micronesia. Thomas 1987: 81. Courtesy of Stephen D. Thomas.

With these and other exercises, aspiring navigators are initiated, in a systematic way, into the knowledge they will need to voyage successfully at sea. As they sail with master navigators, they recall this information and put the principles into practice. Some, but not all, will become master navigators themselves, responsible for transmitting knowledge to the next generation.

The community of sailors in the Caroline Islands takes on the characteristics of a closed maritime society, with selective membership and an oral tradition that is both durable and conservative. The apprenticeship of navigators and sailors (exercises, training at sea) is rigorous, with constant practice and layers of redundancy that facilitate mastery of crucial knowledge. In this way the society and its fundamental store of knowledge are faithfully reproduced and protected. The cosmology of the navigational star structure, and the alternative names for islands and sea lanes, are part of an esoteric seafaring lore known only within the group. This lore also incorporates stories with practical and moral lessons, which are embedded in chants that are structured, metrically and tonally, to aid

in memory recall. The meaning of the chants is often cryptic, and only learned with the interpretive commentary of a teacher. The settings for this instruction are special places (the boathouse, at sea) exclusive to the maritime community. Because sea travel is at once both essential to island life and yet formidable and often perilous, master navigators are also ritual specialists who communicate with spirits of navigation, observe taboos, and perform rituals to ward off dangers at sea.

To place these ethnographic observations in a more general and time-transgressive model, Bourdieu's concept of *habitus* (Bourdieu 1977, 1990) is a useful way to frame the process by which maritime social groups and their knowledge are perpetuated. This is so because habitus explains how and why traditional lifeways are reproduced and preserved over long periods of time, while at the same time mediating between the extremes of determinism – that is, that human perceptions and practices are determined by pre-existing structures over which people have no control – and voluntarism, which accords humans unfettered freedom to make choices that shape the conditions of their lives.

According to Bourdieu, the habitus is a system of dispositions in an individual or social group toward conceptions, activities, or behaviors that are structured and perpetuated by a “present past” of similarly structured practices and worldviews (Bourdieu 1990: 53–55). In other words, each generation inherits a durable structure that defines the parameters of thought and action in which it can operate, and within which practice is ultimately generated. The habitus is not defined by explicit laws, but instead by the unconscious adherence to these inherited structures. Bourdieu did not view the habitus as a purely determinative mechanism in which individuals and groups are without choices, however. Instead, there exist “...an infinite number of practices that are relatively unpredictable”; nevertheless, freedom to choose is not actually unlimited because “...the habitus tends to produce all the ‘reasonable,’ ‘common-sense’ behaviors (and only those) which are possible within the limits of these regularities” (Bourdieu 1990: 55).

To many observers, Bourdieu's actors possess too little agency, leaving insufficient scope to account for innovation (“creation of novelty”: Bourdieu 1990: 55) outside the bounds of inherited knowledge, particularly internally generated change as distinct from that which is externally stimulated or enforced. An alternative

viewpoint is expressed in the “structuration theory” of Anthony Giddens (Giddens 1979, 1984; Nakassis 2006: 19–23), which posits a different relationship between structure and agency. Giddens envisions structure and agency as forming an inseparable duality. Although individuals and groups are undeniably shaped by the durable structures they inherit through no choice of their own, actors are knowledgeable, able to make conscious choices that are not only unconstrained by the limits of the habitus but that also may reshape it. Conscious choices need not have intended or predictable outcomes; they often lead down contingent paths to changes that could not have been predicted and for which the chains of agency are known only in hindsight. In this manner the elements of structure – traditions, worldviews, practices – interact with agency in a dynamic process of continuity and change, of mutual shaping (Giddens 1984: 14). A simple example is linguistic change: language is a dynamic structure in which everyday speech reproduces inherited syntax and semantics, but also introduces changes that one day may be additions to, or modifications of, the structure of language (Nakassis 2006: 21).

The habitus, in Bourdieu's sense, aptly describes the power of tradition and the conservative maintenance and transmission of maritime knowledge over long periods of time. This is particularly the case because maritime communities depended on the effective reproduction of large bodies of specialized knowledge to protect their lifeways and in a literal sense their very lives. Their habitus cannot have been overly rigid, however, because adaptation and innovation were equally essential to their survival. To continue the ethnographic example, elements of innovation are evident among the Caroline island navigators. Often, a master navigator died before imparting to his pupils his full commentary on seafaring lore, leaving them to develop their own interpretations based on the knowledge they had managed to acquire as well as their personal experiences. The new versions were frequently “quite different from the original and yet still workably consistent with reality” (Goodenough and Thomas 1987: 13). Further, there is a tendency for navigators to elaborate on the lore in displays of virtuosity. Some individuals voyage to more distant places along star paths to discover islands previously unknown, which they may equate with previously mythical places. It is also the case that Caroline islanders have adapted to the availability of new materials and sailing (including navigational) equipment from the West. Some new knowledge can be accommodated within the existing habitus, for example, by fitting newly discovered places and new commentaries into the dynamic, living lore. Technological change, particularly that initiated by contact with the West, may precipitate

deeper structural changes, and the fate of the traditions of the maritime communities of the Pacific – their *habitus* – is far from clear in the twenty-first century. Yet the recent history of the Caroline Island navigators amply demonstrates a closed maritime community striving, both consciously and unconsciously, to perpetuate and protect their *habitus*, while also creating and making choices about information that pushes beyond the bounds of their inherited structures.

Mycenaean Maritime Communities

We ought now to ask whether we can detect maritime communities in the Mycenaean world possessing a specialized body of maritime knowledge. There is little direct evidence for them, though it is possible to make certain inferences from indirect evidence, and from what we know of maritime communities of other times and places. There are certain general statements we can advance, for example that the nautical life involves specialized skills and occupations. Shipbuilding and maintenance, navigation, and even rowing and other crew duties all require experience and advanced skills, which must have been transmitted through a system of master–apprentice relationships. A consistent conclusion drawn from recent trials of replica ships – from “Neolithic” reed boats (Tzalas 1995b), to Bronze Age galleys (Severin 1985, 1987), to the reconstructed trireme *Olympias* (Rankov 2012) – is that an inexperienced crew requires a long apprenticeship before it can properly propel and control an unfamiliar vessel. The triremes of the Classical Athenian navy were manned by professionalized crews of free citizens, metics, and foreign mercenaries who practiced during peacetime (Hale 2009); a similar program of training may have been followed by the captain, helmsman, and rowers of the Mycenaean galley.⁵

It may be possible through archaeological means to identify the coastal habitations and workplaces of maritime communities, but this remains a challenge because so few harbors, at least of the Mycenaean period, have been recognized and studied. This topic will occupy much of the remainder of the book. For now, let us explore how the early Greeks represented their maritime pursuits in word and image, through the Linear B tablets, iconographic images, and the later Homeric epics, particularly the *Odyssey*. In these sources, we might recognize the bare outlines of a maritime *durée*, of persons in action or

a persistent *mentalité* expressed in words.

Linear B Evidence

It is worth recalling that the Mycenaean galley was the largest and most technologically advanced machine of its time, and the resources and organizational capacity of the palaces may have been required to build and maintain a galley fleet. Although it is uncertain how extensively Mycenaean ships traveled around the Mediterranean in pursuit of trade and diplomatic missions (see the discussion in [Chapter 2](#)), certain materials, particularly metals, were imported from overseas and controlled carefully by the palaces. The Linear B tablets from Pylos provide compelling textual evidence for palatial oversight of building, finding crews for, and sailing ships, at least in Messenia (Palaima [1991](#): 284–86). The personnel drafted for these tasks are listed or named. Shipbuilders (*na-u-do-mo*) are mentioned on two tablets at Pylos. On Vn 865, *na-u-do-mo* is the heading of a list of 12 names, each followed by the numeral 1, probably indicating 12 shipbuilders assigned to construct one ship each. On Na 568, a group of men with this title is recorded with a single place name and an exemption of 50 units of flax while they are supervising construction. The title *e-re-e-u*, found on several tablets at Pylos, seems to refer to an official in charge of rowers. The rowers themselves were recruited from a number of coastal towns, apparently as part of an annual levy organized using the same principles as Mycenaean taxation; they performed their services in exchange for land use rights (Killen [1983](#)). The association of at least one of the absent rowers on tablet An 724 with the *lawagetās*, a military leader, suggests that these records refer to a military, rather than commercial, fleet.

At least seven names occurring in the Linear B archives at Knossos and Pylos derive from roots associated with maritime activities, translatable as “Ship-Famous,” “Fine-Ship,” “Swift-Ship,” “Ship-Starter,” “Shipman,” “Fine-Harborer,” and “Fine-Sailing” (Palaima [1991](#): 284). Intriguingly, however, the men with these names appear mainly as herders, as well as two bronze smiths at Pylos; none is recorded pursuing a maritime activity. One way to interpret the lack of correlation between name and occupation is that as the palace states reorganized and consolidated their economies, workers from across the economic spectrum were co-opted to the large, palatially controlled industries, including metallurgy and other craft manufacturing, and the production of wool on Crete and linen at Pylos. One of the political consequences of economic restructuring by

Minoan and Mycenaean states tended to be that traditional ties between communities and their landscapes and subsistence practices were severed (Haggis 2002). Even so, skilled seamen would have been prime candidates for the annual levy of rowers. We might imagine that many such names existed among members of specialized maritime communities throughout the Mycenaean world; on the other hand, these could be very old names that had long since lost any exclusive association with the original occupation, much as names like Smith, Miller, and Carter have done in English-speaking countries today.

The Linear B scribes did not concern themselves with localized coastal activities such as fishing, presumably because the palaces had neither the interest nor the ability to exert direct control over a ubiquitous resource with little potential for profitable specialization. Products of the sea must have been widely available in local markets, and the palace may have used agents or other means of acquiring them as needed. The practices of fishing and short-distance voyaging for social and economic purposes must have continued, both within and beyond the palatial territories, without hiatus during the Mycenaean period. In other words, these traditional activities tend to persist regardless of the vagaries of political organization.

The matter, discussed in Chapters 2 and 3, of whether maritime commercial activity was carried out in state-controlled ships or commissioned to private merchant vessels that may have been partially or fully independent of the palace, is unlikely to be resolved soon, barring the discovery of a series of tablets that explicitly addresses overseas trade. The same may be said for Wedde's (2005) argument from the Pylos tablets that a "galley subculture," composed of captains, helmsmen, and rowers, arose on the Messenian coast to challenge the authority of the palace in LH IIIB (Chapter 3). This is one plausible interpretation of the apparently ominous circumstances under which rowers were recruited in one document (made up of tablets An 657, 654, 519, 656, and 661) bearing the heading, "Thus the watchers are guarding the coastal regions" (Chadwick 1994: 173–79). Whether the galley crews helped to topple the palace, or instead came to the aid of the palatial elites in a time of grave danger (Wachsmann 1999), we may infer minimally the existence of a seafaring community with specialized, highly valued knowledge and skills – helmsmen and navigators being most obviously in demand. To what extent that community operated independent of the palace, we cannot say with certainty, but we can propose with some confidence

that the state controlled some aspects of seafaring – such as military operations and long-distance trade – while leaving the rest in private hands. Thus, the Linear B archives do not offer an unambiguous portrait of a maritime community, but the pattern of palatial political and economic interests revealed in the tablets points to an aggressive but limited oversight of nautical affairs, leaving much room for traditional coastal activities.

Iconography

The Flotilla Fresco at Akrotiri, depicting a range of ships and boats, gives some sense of the complement of vessels one might see in a busy Bronze Age harbor. The small rowed skiff W622 seems to play the role of pilot, but must have functioned just as well as a fishing boat or short-distance coaster. The fragmentary but contemporary fresco from Ayia Irini, Kea (W672–676), shows either crews or harbor personnel walking on shore and mixing something in large, tripod cauldrons. Behind them is an ashlar building that suggests parallels with the possible ship shed on the north wall of Room 5 of the West House, as well as the foundations of ship sheds known archaeologically on Crete. In the frescoes, a visual distinction made between the crews, dressed only in loincloths, and the honored guests, who wear elaborate robes, emphasizes the difference in status between elites and non-elites. A recent interpretation of the Flotilla Fresco views all these men, seamen and foot soldiers alike, as members of a victorious warrior “coalition”: “soldiers, priests, sea captains, and lowly paddlers – whose membership in hierarchical but cooperative coalitions ensures island power” (Chapin 2007: 142).

These glimpses into maritime life in the cultural sphere of the Minoan palaces of the neopalatial period may serve as a bridge to Wedde's Mycenaean galley subculture. Wedde traces these groups, and with them a continuity in the traditions of seafaring, into the EIA through the iconography of the galley, which peaks in LH IIIC and persists with only gradual modification in the EIA. This continuity may be seen as a strong indication that seafaring communities and their traditions survived intact despite the collapse of political centralization.

Homeric Epics

The commission of the Homeric epics to writing postdates the fall of the Mycenaean palaces by more than 400 years, but as the oldest

examples of Greek literature they are closest in time to the events of a distant past about which the poet sings. Furthermore, the *Odyssey* is, at least superficially, a seafarer's tale. Although it is well established that Bronze Age survivals in Homer are few (Bennet 1997; Finley 1978; Raaflaub 1996), it might be possible to recognize a *mentalité* or elements of a maritime habitus that persisted from the LBA into historical times.

Seafaring is not glorified in Homer. Rather, heroes like Menelaus, Nestor, and Odysseus emphasize the ardor, the danger, the terror, and the loss of life at the hands of malignant forces of nature and implacable gods and monsters. The *Odyssey* abounds in stories of ships blown off course, stranded in windless seas, or wrecked altogether. A recurring theme is that these disasters are visited upon crews that have offended a powerful god in some way. The audience listening to a bard singing these tales could not fail to grasp the implication that seafaring was not for the faint of heart or for the uninitiated. Many would have had personal knowledge of a ship or a person lost at sea.

In the *Odyssey*, there are three main groups of sea travelers: warrior-heroes and their followers, pirates, and merchants. They are distinguished on the basis of who they are – their status and social identity – rather than on their actions at sea, because their realms of activity – war, trade, and raiding – overlap to a surprising extent. As we have seen, the Trojan War heroes often acted as pirates do, plundering coastal regions for needed supplies or treasure. They also were the beneficiaries, if not the actual agents, of long-distance trade for raw materials and other exotic commodities (Tandy 1997: 75). Pirates pursued organized, “informal” warfare, and their ships and crews must have been fitted out to wage war. Merchants, too, might raid when the opportunity arose.

Odysseus and the rest of the Trojan War heroes formed an elite warrior class that ruled small, dispersed chiefdoms, more analogous politically with an emerging aristocracy of Homer's time – the *basileus* and his followers of the eighth century – than with the rulers of the Mycenaean world. In Homer, the social and economic structure was based on the *oikos*, consisting of the extended family (usually three generations living together) and its land, animals, slaves, and all other assets. Ships were owned by prosperous families, whose patriarchs could assemble a crew from among the dependants of the *oikos*, or hire them from elsewhere. This world is more similar to Viking-era Scandinavia (Rönbnby 2007) than to the Mycenaean palatial era.

Eighth-century basileis, like their epic counterparts, constructed and maintained their status by differentiating themselves from the rest of society by means of what David Tandy (1997: 141–65) terms “tools of exclusion.” The most prominent of these devices were inter-elite, reciprocal hospitality and gift-giving; councils and feasts; hero cult and warrior burial; and indeed the epics themselves, which can be seen as part of the program of elite self-definition and exclusion (Tandy 1997: 141, 152). A detailed treatment of this program is beyond the scope of the present work (for different perspectives, see Antonaccio 1998; Morris 1987, 1998; Osborne 1996: 70–136; Tandy 1997; Whitley 1991), but a few examples from Homer and from the archaeological record give a sense of it. Telemachus receives a lavish reception at Pylos and Sparta once he is recognized as the son of Odysseus, and thus as a member of the elite warrior class. His arrival at Pylos interrupts a great feast at the seashore for which 81 bulls were sacrificed to Poseidon (*Odyssey* 3.1–10), obviously well beyond the resources of all but the wealthiest of men. The audience halls of Alcinous, Odysseus, Nestor, and Menelaus find parallels in several large buildings on the Greek mainland and islands (Mazarakis Ainian 1997: 363–67; Tandy 1997: 144–49). Beginning in the later eighth century, cult places dedicated to epic heroes, including the Menelaion at Sparta and possibly shrines to Agamemnon at Mycenae and Odysseus on Ithaca, “...paralleled social display and epic poetry as means of legitimating social and economic inequality...[t]he cults of epic heroes can be seen as part of that ideology: their worship confirmed social realities for those in power, who claimed them as ancestors” (Antonaccio 1998: 64). For the Homeric leaders, long-distance maritime travel was an essential contribution to the identity of the warrior-chief: to prove one's mettle by warring and raiding in distant lands, to procure exotic material and objects whose possession conferred status, and to establish alliances with other elites.

Those who could be identified as merchants did not belong to the elite class. Homeric heroes display ambivalence toward trade for profit, which was generally left to professional merchants and, especially, Phoenicians. At one point a Phaeacian youth insults Odysseus' fitness for (elite) athletic competition by saying, “You look more like the captain of a merchant ship, plying the seas with a crew of hired hands and keeping a sharp eye on his cargo, greedy for profit” (*Odyssey* 8.161–64). In Hesiod's near-contemporary *Works and Days*, a common farmer could take up sailing for part of the year in order to sell his produce for profit (*Works and Days* 619–94).⁶ There is no reason to believe, however, that elites of Homer's time did not

participate in trade voyages, particularly those involving gift exchanges or luxury materials and products. The apparent disdain of trade among the Homeric heroes may be a bit of aristocratic dissimulation aimed at creating social distance from professional merchants.

The sea tales in the *Odyssey*, the gods, monsters, and natural hazards that Odysseus encounters in his wanderings, are a potentially rich source of information about ancient attitudes toward the sea, but they are notoriously difficult to interpret. Is it possible to find in them traces of a more ancient maritime lore? One way to interpret these stories is as mariners' tall tales, plucked from hoary oral tradition and rendered increasingly fantastical with retelling over time. Exaggeration and dissociation from reality may reflect a combination of conditions inherent to both early seafaring and oral tradition. The terror of encountering storms and hostile natives in uncharted waters would provide a source of vivid recollections and dire cautionary tales. Exaggeration might serve several purposes: the enhancement of a good story; the use of hyperbole to impress upon the listener a visceral sense of danger, whether in a didactic or performative context; or as a way to maintain the secrecy of routes and places by distorting their locations and inflating the hazards associated with them. All manner of anecdotes could be believable given a hazy knowledge of some part of the world. In the *Odyssey*, once the action moves from the Aegean and eastern Mediterranean westward into the central Mediterranean, places and characters shift from the real and identifiable (e.g., Pylos, Sparta, the Nile River) to an unreal world of monsters, goddesses, and the realm of the dead. The commission of the Homeric epics to writing occurred just as the colonizing movement west to Sicily and Italy was underway; the origins of some of the sea tales in the *Odyssey* might be traced to the imperfect knowledge about these new worlds.

It is also plausible that these stories contain elements of phenomenological itineraries full of periplus-like sailing directions, mnemonic devices for recalling details of long voyages, and cautionary tales told in metaphorical and possibly encoded terms. If we imagine the Greeks trying to come to grips with new lands and essentially uncharted seas in the eighth and seventh centuries BC, several fragments of sailing instructions can be recognized in the *Odyssey*: (1) segmented journeys from headland to headland and island to island; (2) storms and gales with realistic effects and reactions by Odysseus' crews; (3) coastal hazards including narrow

passages and submerged rocks and coastal shelves; (4) rough seas with currents, waves, whirlpools, and eddies; and (5) potentially hostile natives. Naming and animating these people, places, and forces of nature in the form of narrative stories served practical purposes. They were incorporated into a vital body of maritime knowledge as mnemonic devices to aid in the recognition of a route and the hazards that lay along it. Naming and describing transforms unknown to known, and begins the process of domestication of an unfamiliar part of the world.

It is not particularly useful in the present context to try to chart Odysseus' route or to identify the places where he encountered gods and monsters, as so many "Homeric geographers" have done (e.g., Bérard 1927–9; Bradford 2005; Severin 1987; Stanford 1947). To a bard's audience, any explicit association between the fantastical places and characters inhabiting locations beyond the familiar geographical realm and real-world routes and inhabitants would be meaningless detail. The epics are not geographical treatises, after all, and although the audience would expect some adherence to what they knew of the world and the Trojan War story, much of the entertainment value of the performance was in being lifted out of the here and now to journey to times and places literally out of this (i.e., the audience's) world.

Thus, instead of trying to match epic elements to the real world, it makes sense to think of Odysseus' encounters as representative of universal experiences at sea. The proximal impetus for some of the stories might have been the colonizing effort in the central Mediterranean and northern Africa, but the pattern of their construction may be much more ancient. To cite a few examples, the "Clashing Rocks" that appear in the *Argonautica* (the myth of the voyage of Jason and the Argonauts) are often identified with the mouth of the Bosphorus, the entrance into the Black Sea (Apollonius Rhodius, *Argonautica* 2.555–606). These two floating masses of rock crashed together whenever a ship tried to pass between them, demolishing the ship and its crew. The origin of this story may lie in the difficulty of passing from the Dardanelles through the Bosphorus into the Black Sea, because of the combination of prevailing northerly winds and the strong current of the Black Sea outflow. Ships could only make headway by waiting for a strong southerly/westerly wind to propel them against the current.⁷ The danger of being driven against the rocks if the wind failed may have prompted the story of the clashing rocks, but it is easy to see how such an apparition could

be inspired by any turbulent narrows. A distinct but similar obstacle, the “Wandering Rocks,” was encountered both by Odysseus (*Odyssey* 12.61–72) and Jason (*Argonautica* 4.785–88). Similarly, Charybdis, the personification of a treacherous whirlpool, was encountered by these two heroes (*Odyssey* 12.235–44; *Argonautica* 4.920–60). It may be significant that once the heroes passed safely, these dangers were effectively neutralized: once Jason had passed between the Clashing Rocks, they became fixed in place (*Argonautica* 2.606–607); and the Sirens were said to have committed suicide after they failed to entice Odysseus to shore. These resolutions may be metaphors for successfully incorporating these hazards, and the means to overcome them, into the knowledge system of the maritime community.

Into the monstrous appearance and practices of the creatures with whom Odysseus and his men came into contact can be read assorted fears about hostile indigenous people. Again and again, they met inhabitants living in incomprehensibly un-Greek ways, from the Cyclopes who lived in isolation from one another and failed to take any account of the rich agropastoral and maritime potential of their offshore island (*Odyssey* 9.116–39), to the horrific cannibalism of Scylla, the Cyclopes, and the Lystraegonians. Cannibalism is a virtually universal taboo, which throughout history has been falsely projected by colonizers onto indigenous people, out of ignorance, fear, or a need to regard them as less than human (Biber 2005; Clemmer 1996; Obeyesekere 2005). False or exaggerated representations of the “other” in seafaring lore served to underscore the caution necessary when making incipient contacts with people in the absence of a common language or customs. These concerns were often justified.

Could some of these elements be much older than the period of westward colonization? Richard Martin argues that the *Odyssey* tells of the end of a heroic tradition; the poem and its characters speak to a vanishing past from a diminished present, and for Iron Age bards performing the tale this heroic age was that much more remote (Martin 1993: 240; Murnaghan 2002: 140–41). In the *Odyssey*, the Trojan War heroes are now dead or returned home to relatively uneventful lives with no comparably heroic successors in sight. Among the lost traditions was adventure on the boundless sea, and hard men like Odysseus who embraced both its peril and its magic. The death of the old maritime tradition is signaled when the Phaeacian ship returning home from conveying Odysseus to Ithaca is turned into stone by an angry Poseidon (*Odyssey* 13.125–83). With this act, the maritime life of these consummate seafarers is “fossilized” and passes

into the past.

We may bring this discussion back to the Mycenaeans by noting the strong evidence that Mycenaean ships had already arrived in the southern Italy and Sicily at the beginning of the Mycenaean period, by LH I if not a little earlier. They, not the Minoans or the colonizers of Homer's day, were the Aegean pioneers in the region. How did they assemble the information they needed to make the voyage safely, and how did they structure knowledge to instruct and transmit it across generations? I submit that the process must not have changed much over the centuries, and that fragments of maritime lore embedded in the *Odyssey* were probably drawn from much older traditions of building phenomenological itineraries and structuring narratives of exploration. Obviously, in any long-lived oral tradition there is a process of selection and updating of material that prevents us from retrojecting stories directly and literally back to Mycenaean times. Nevertheless, the *Odyssey* and other early Greek literature, when examined alongside archaeological and ethnographic evidence, can contribute to a better understanding of the cognitive and practical process of building and maintaining maritime knowledge over periods of centuries.

Conclusions

The environmental conditions of seafaring in the Aegean area are complex outcomes of earth processes in nested scales from global to local. These interactions create patterns of climate, weather, currents, and winds, which are in turn influenced by the Aegean's unique geographical position and topographic configuration, with its profusion of islands and deeply indented coastlines. These parameters undoubtedly shaped the development of maritime life in the Bronze Age, but social factors were also crucial in the formation and maintenance of maritime connections, sometimes in the face of environmental obstacles.

Because of the relatively small scale of the Aegean Sea and the dense packing of islands within it, navigation involved coastal pilotage to a much greater extent than open-sea navigational techniques. Two distinct levels of seafaring expertise existed: a general level sufficient for local fishing and short-range travel to nearby coasts and islands; and a specialized, sophisticated knowledge of environmental conditions, navigational techniques, routes, and distant places for medium- and long-range travel. A landlocked farmer like

Hesiod with a basic knowledge of seamanship could make short sea crossings to trade his wares. The professional seaman engaged in longer voyages, on the other hand, drew upon a complex store of maritime knowledge. Such knowledge was systematized within a discrete maritime community as a body of lore, the transmission of which involved hands-on training, formal sailing instructions, and vivid, metaphorical narratives designed as mnemonic devices and in-group esoterica. Because this information was communicated orally, it would not be expected to survive in the material record, but the early Homeric literature may preserve traces of this lore, and ethnographies of modern low-technology seafarers offer enlightening insights into the structure of maritime communities, the content of their knowledge, and the mechanisms of its transmission. The combined evidence of texts, iconography, and archaeological materials shows that maritime communities and their specialized expertise survived relatively intact through stable and unstable periods.

It is now time to address a problem outlined in [Chapter 1](#): Where are the Aegean harbors and landfalls of the LBA, and why do we know so little about them?

Five Coasts and Harbors of the Bronze Age Aegean

Characteristics, Discovery, and Reconstruction

For all the indications that sea travel was fundamental to the Mycenaean political economy, we have little evidence for their coastal anchorages, let alone developed harbors or port towns, in the Aegean. We must ask why this is; what, if anything, we can do to recover and investigate them; and why we should want to do so in the first place. These questions form the focus of this chapter.

To tackle the last question first, the importance of identifying *specific* landing sites instead of merely characterizing the *types* that would have existed on Bronze Age Aegean coasts (e.g., Morton 2001: 6–7) must be established. Many anchorages will have been small, susceptible to alteration over time, and not necessarily accompanied by a settlement or a conspicuous artifact scatter. Is it worth the time and effort to search for them? Surely it is if we are serious about understanding the networks of interactions by land and sea that amounted to the connectivity of daily life, particularly if, following Horden and Purcell (2000: 123), our aim is to reveal “...the various ways in which microregions cohere, both internally and also one with another – in aggregates that may range in size from small clusters to something approaching the entire Mediterranean.” Only by knowing the locations of the coastal nodes in these networks can we fully make use (and sense) of archaeological data bearing on interaction at all scales.

Dedicated harbors as well as anchorages used only intermittently or opportunistically must have been abundant in many regions during Mycenaean times, both because of the morphology of the Greek coastline and because they were needed. As communication by sea expanded, a multitude of anchorages, large and small, was required to ensure that voyaging was as safe as possible, and to facilitate economic and social relationships. Ship captains needed access to safe anchorages to shelter from winds and storms, to procure provisions, and to enter into various kinds of transactions, including trading and

raiding. Running out to sea to escape a storm was a maneuver of last resort; to seek a coastal haven was much preferred. At times, ships and their crews were forced to wait for favorable winds, and this could occupy days or weeks during which their needs for sustenance would have to be met. The potential hostility of the local population was a complicating factor that must often have forced crews to seek alternative landing sites. Another function of small, scattered anchorages might have been as convenient pickup points for agropastoral products to be transported by sea in local and regional trade networks (Rothaus et al. 2003: 40).

Too often, however, the existence of safe, suitable anchorage is taken to be self-evident or based on guesswork that is quite possibly wrong. Often, it seems, the problem of long-term coastal change is simply left unexamined. A common mistake is to assume, implicitly or explicitly, that Bronze Age and modern coastal morphology are essentially the same. Even when some attempt is made to infer changes based on observations of modern coastal landscapes, in the absence of geomorphological analysis the conclusions reached can be misleading or wrong, and are at best limited in their ability to lead to a genuine understanding of ancient coastal environments. The actual changes to Aegean coastlines over time vary widely, but they tend to have localized causes that can only be charted with geoarchaeological techniques. In this chapter, I describe the process of working back to Bronze Age coastlines, and stress the importance of doing so in a systematic way.¹

Conditions of Discovery

There are few places on the modern coastline to search for Bronze Age anchorages and harbors that can truly be called “obvious.” Locations that boast fine harbor basins today, or that preserve harbor works from historical periods of the past, are no sure indicators of high potential for harbors of the Bronze Age. One reason for this is changes in maritime practice – mainly ship technology – over time. It is undoubtedly true that small, shallow anchorages perfectly suitable for Mycenaean shipping could not accommodate the large, heavily laden military and commercial fleets of later Greek and Roman antiquity. Thus, to limit the search to prominent historical and modern harbors would be to miss most of the Mycenaean maritime landscape.

A more important reason is pervasive change over time in the physical topography of the coastline, caused by short- and long-term

geomorphological processes. The most prominent of these are sea-level change, sedimentation, marine erosion, and tectonics. Eustatic sea-level change, caused by the cycling of ocean waters into and out of the polar ice caps, has had a profound effect on the world's coastlines since the end of the last Ice Age. Following the last glacial maximum circa 18,000 years ago, at which time eustatic sea level lay at 90 to 150 meters below present sea level, global warming induced rapid sea-level rise, interrupted only by the cool Younger Dryas event of 10,000 to 11,000 years ago, until circa 6000 BP (van Andel 1989; Wells 2001: 151). In the Mediterranean, maximum sea transgression into coastal areas was reached circa 6000 BP, followed by a stabilization of eustatic sea level. Since that time, global eustatic sea level has slowly risen by no more than five meters or so. Since the LBA, eustatic sea-level rise is only a few meters, a figure that can account neither for observed vertical changes in relative sea level caused by tectonic uplift and subsidence, nor the lateral and vertical changes effected by coastal sedimentation and erosion.

Moreover, the discovery potential for Mycenaean harbors is not the same for all parts of Greece and the Aegean, because regional-scale geomorphological histories may make detection of ancient harbors relatively easier or more difficult. As a result of regional tectonics, some coastlines abound in natural coves and inlets, while others can be characterized as virtually harborless coasts. Faulting of the Greek land mass into mountains and intervening valleys in a general northwest-southeast alignment, followed by inundation of the coasts by the sea, has produced the characteristic pattern on Greece's Aegean (east-facing) shores of promontories separated by deep gulfs, with numerous smaller inlets on a generally rocky coast (Morton 2001: 15–16). The Aegean coast of Asia Minor developed deep inlets reaching tens of kilometers inland at places like Miletos, Ephesus, and Troy. These great estuary and delta systems hosted superb Bronze Age harbors, but have silted in completely in historical times, leaving once-great harbors stranded many kilometers inland.

There are other distinctive patterns. Some coastlines are formed by major faults that separate a mountain ridge from an adjacent collapsed and submerged block; these coasts are steep and linear, with few inlets or offshore islands, and thus little safe anchorage (Morton 2001: 137). Examples of such “harborless” coasts occur in Epirus and Thessaly (the two flanks of the northern Greek mainland), and on the long northeastern coast of Euboea. They tend to be cliffbound and very deep – difficult places to find holding ground for an anchor or to

come ashore for provisions. In a few places, perennial rivers have broken through to the coast, forming broad estuaries and deltas. In Epirus north of the Ambracian Gulf, marine embayments or estuaries at the mouths of the Acheron and Kalamas (Thyamis) Rivers provided safe haven and access to fertile hinterlands. If it can be established that the separation of the two blocks forming such coastlines occurred before the Bronze Age, the candidates for harbor locations are few and the search is simplified.

By contrast, the long, west-facing coastline of Elis in the western Peloponnese has witnessed several sequences of accretional barrier and lagoon formation since the end of the Mesolithic period, with the result that most evidence of Bronze Age coastal landforms and archaeological sites is now buried under meters of sand and wetland deposits. There, investigation of Bronze Age coastal environments requires long-term programs of geological coring, and results remain tentative even after years of study (Kraft et al. 2005).

The lack of knowledge about Aegean Bronze Age coastlines is also partly a symptom of the general historical trajectory of maritime archaeology in the Mediterranean, which in the twentieth century was dominated by studies of ships and shipwrecks, at the expense of harbors and coastal landscapes (Marriner and Morhange 2007: 137–44). The emphasis on ships continues today in both the Old and New Worlds (e.g., Bass 2005a; Blue et al. 2006; Gould 2000). The shipwrecks at Uluburun, Gelidonya, and Point Iria have generated extraordinary information about LBA seafaring and maritime trade, but as restricted spatial and temporal events, they constitute a small part of a much larger picture (Marriner and Morhange 2007: 180). When harbors *were* the object of study, they tended to be the largest and best-known artificial harbors of the Greco-Roman world. Prehistoric and small, natural anchorages and harbors were rarely investigated, nor were there frequent efforts to reconstruct entire “maritime cultural landscapes” formed by networks of landing sites, coastal settlements, and their ties with other communities by land and sea (Westerdahl 1992). In this respect, Mediterranean maritime archaeology is less advanced than in northwestern Europe or the Baltic area (e.g., Chapman and Chapman 2005; Cunliffe 2001; Ilves 2009). Moreover, until recently, maritime archaeology in Greek waters lagged behind other areas in the Mediterranean, such as the Levantine and Turkish Aegean coasts. This can be attributed in part to highly restrictive controls placed on underwater archaeology by the Greek underwater archaeological authority (known as *Enalio*),

particularly with respect to foreign teams. As a result, most of the major projects and innovations in underwater technique were developed on the coasts of countries like Israel and Turkey, where permitting was more liberal (Bass 2005c; Raban 1991). In a policy shift that occurred after 2000, Enalion has invited collaborations with foreign teams, and many are now underway alongside an expanded agenda for Enalion's own projects.

It must be pointed out that a long tradition of coastal geomorphology has existed in the Aegean, targeting coastal change over time in both local and regional settings, for example Franchthi Cave (van Andel and Sutton 1988), Asine (Zangger 1994b), Tiryns and the Argive Plain (Niemi and Finke 1988; Zangger 1991, 1994a), Pylos (Kraft et al. 1980), Dimini (Zangger 1991), Troy (Kraft, Kayan et al. 2003; Kraft, Rapp et al. 2003; Rapp and Gifford 1982), Ephesus (Kraft et al. 2000), Miletos (Brückner 2003), and the deltas of the Alpheios (Kraft et al. 2005) and Acheron (Besonen et al. 2003) Rivers. In Greece, this work could generally be accomplished under more easily acquired permits granted by the geological service (IGME). Yet the specific areas in need of development in the Aegean are two: first, there is a lack of systematic programs of research that identify and investigate local and regional maritime cultural landscapes in a holistic way; and second, programs of coastal reconstruction have often not been closely coordinated with terrestrial surveys and excavations, in terms of research design and planning, shared fieldwork and resources, and joint publication. For example, although all the programs of coastal paleogeography cited above sought to address specific archaeological questions, most were not integrated closely with a particular excavation or survey on land. Meanwhile, excavations and regional archaeological surveys on islands and in coastal areas have rarely extended their focus beyond the shoreline, with the result that the potential of integrative concepts, such as the maritime cultural landscape, which situate coastal regions within interactive networks that unite inland, coast, and sea, has scarcely been tapped (Berg 2010). Some vestiges of the former restrictions remain as mandated by national legislation covering all archaeological activity, including a limited number of available permits for foreign researchers and a clear distinction between terrestrial and underwater permits (these come under separate authorities, and a project can rarely expect to hold both land and underwater permits in a single year). Yet there are many ways to make collaborative research work within the present regulations: much paleocoastal fieldwork can still be accomplished on land under geological (IGME) permits, and it is possible to bring together mixed Greek and foreign nationals to work

in a given locality under separate projects and permits. Nevertheless, moving toward a truly holistic coastal archaeology of maritime cultural landscapes will require fully integrated programs of archaeological and geomorphological investigation of sea and land in coastal regions.

Geomorphology of Coastal Zones

Coastlines are among the Earth's most dynamic geomorphological settings. George Rapp and John Kraft (1994: 71–72) list the characteristic and interrelated processes: “local tectonism; eustatic sea level change; climatic change; ocean currents and wave regimes; the nature and frequency of catastrophic events; sources, types, and quantities of sediments available and the resultant aggradation and progradation of deltaic floodplains into erosional and tectonically derived embayments; and the nature and intensity of human activity.” Over time, even the most stable coastal environments evolve as sediments accumulate or shorelines erode. Local relative sea level moves up or down in response to changes in the absolute level of the land (tectonics, isostasy²), sea (eustasy), or both. Climate and topography control the flow of energy (tides, waves, currents, sediment flux) in a coastal system. The tectonic environment (faults, tectonic events) impacts topography and relative sea level, and sometimes introduces changes to coastal topography that are catastrophic from a human perspective. Finally, human impacts on coastal environments, notably in the form of increased sedimentation, have been detected since the Neolithic period in the Mediterranean. The following discussion summarizes briefly the most important processes and materials involved in long-term coastal evolution, following the thorough treatments of the topic by Lisa Wells (2001) and Michael Summerfield (1991: 313–42).

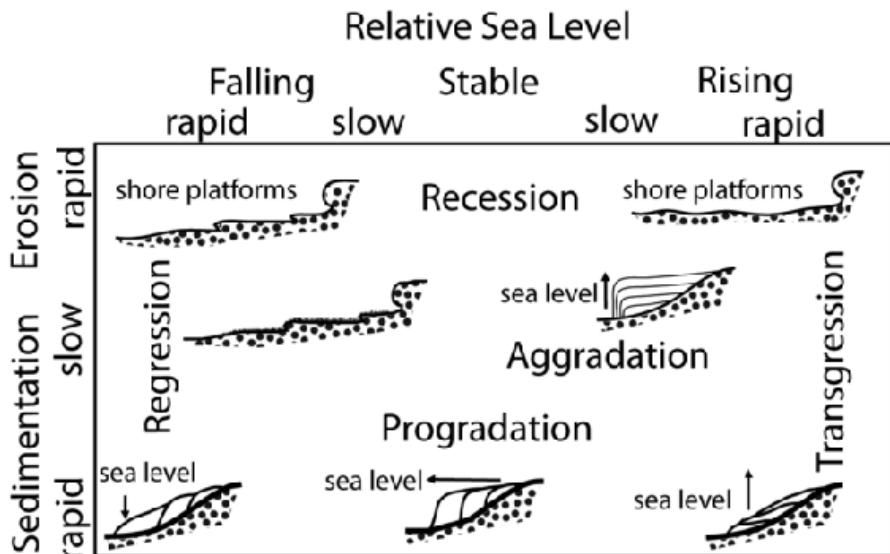
Broadly speaking, a first-order distinction can be made between open coasts and protected coastlines (Wells 2001: 150). Many coastlines cannot be characterized as completely open or completely sheltered, but for a coastal location to have been viable as a harbor, it must have been sheltered to at least a considerable degree from winds and waves. Often, because of shifts in wind direction and intensity during the course of the year, the viability of a harbor may respond to seasonal or even day-to-day conditions.

Open coasts are exposed to the full impact of winds and wind-driven waves, creating high-energy environments and landforms dominated

by beaches or rocky shorelines. Coastal erosion is common on open coasts, and sediments tend to be relatively coarse with abundant organic material including woody debris or carbonate particles. By contrast, on protected coastlines, wave energy is attenuated by refraction, creating low-energy environments exemplified by estuaries and tidal marshes in which sedimentation dominates coastal evolution and landform development. Sediments are relatively fine grained and may contain highly organic deposits such as peat. Protected coastlines are ideal locations for sheltered harbors.

Long-Term Coastal Evolution

Coastal evolution can be characterized in terms of the relative motion of the shoreline over time in response to the processes outlined by Rapp and Kraft above, and by the resulting landforms, which can appear and disappear with successive periods of coastal change. Joseph Curray (1964; see also Wells 2001: 154–55) proposed a classification of coasts based on their relative motion over a discrete period of time: (1) *progradational coasts* grow seaward (prograde) as a result of sedimentation; (2) *transgressive coasts* are submerged as a result of relative sea-level rise; (3) *recessive coasts* erode landward (marine erosion); (4) *regressive coasts* emerge as relative sea level falls; and (5) *aggradational coasts* grow vertically (aggrade) when the rates of sea-level rise and sedimentation are roughly equal (Fig. 5.1). The early Holocene record of the Mediterranean, outlined above, provides a good example of rapid and widespread transgression as global sea levels rose. The maximum transgression is often marked by wave-cut notches in a former sea cliff, or other signs of a paleoshoreline stranded far inland from the modern shoreline. After eustatic levels stabilized circa 6000 BP, these transgressive coasts shifted to progradational, recessive, or aggradational, depending on the rate and dynamics of sedimentation and erosion in a given location. The Aegean coasts of Turkey provide dramatic examples of deep embayments created by the late Pleistocene to early Holocene marine transgression, followed after circa 6000 BP by a gradual but inexorable progradation of tens of kilometers in the major river deltas. The relationship of sea and land created by the interplay of erosion and sedimentation can be altered locally by tectonic movements.



5.1 Classification of coasts by relative motion of the shoreline. After Wells 2001: 154, fig. 6.2. Courtesy of University of Utah Press.

Sediment Supply to Coastal Zones

There are three main sources of sediment supply to the coastal zone: (1) the coastal landforms themselves, notably sea cliffs; (2) the land inland from the coast; and (3) material transported from offshore (Summerfield 1991: 324–25). The volume and nature of the sediments are controlled by geology, tectonics, climate, oceanography, and the topography of the sediment source area (Wells 2001: 155). On open coastlines, high wave energy can erode coastal landforms, causing recession and liberating sediment to be transported and reworked. The amount of sediment thus produced depends on wave energy and the degree of consolidation of the cliffs or other landforms suffering erosion.

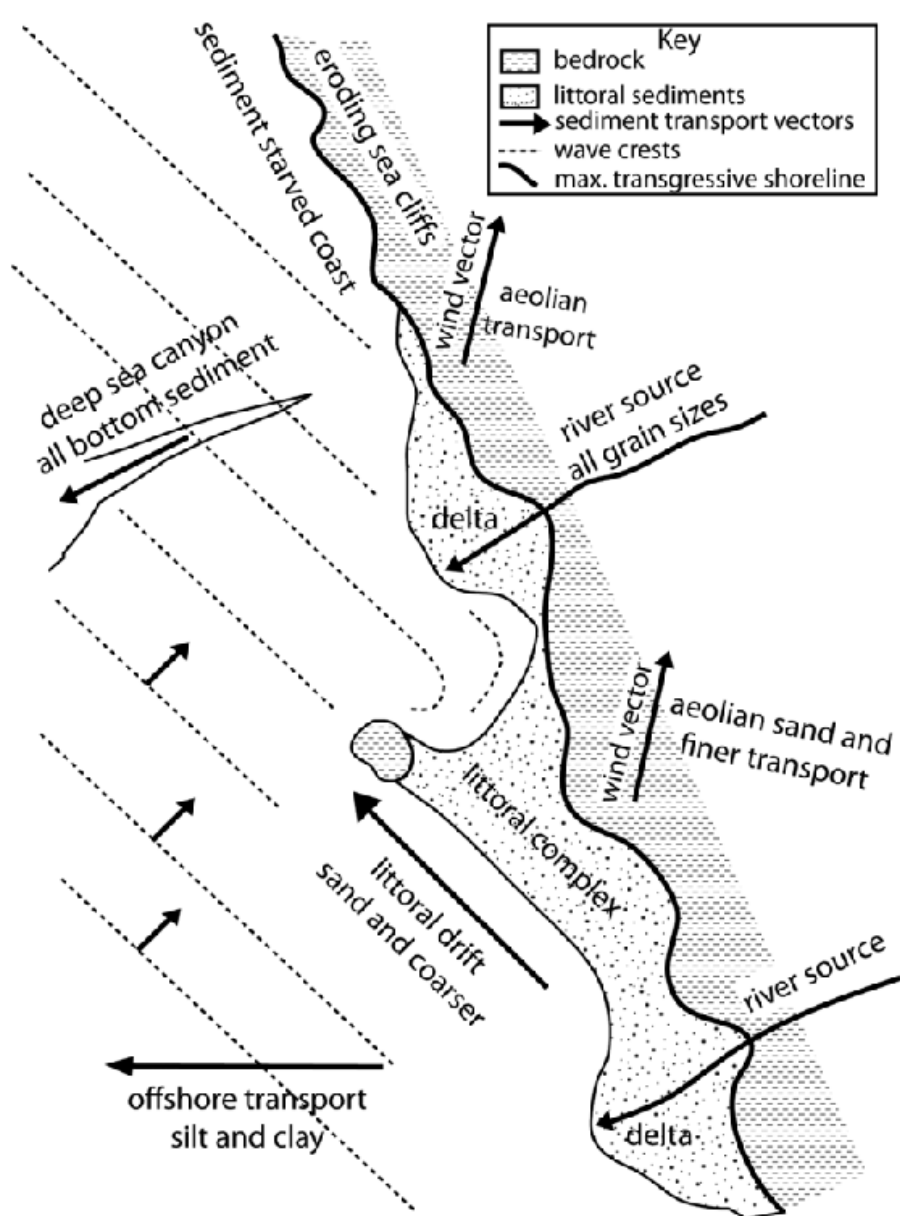
By far the greatest sediment load, however, is brought to the coast from inland by rivers. On average, mid-latitude coastlines receive more than 90% of their sediment from fluvial sources. Where drainage systems are long and broad (e.g., the Nile, Tigris, Euphrates, Maeander), the material transported to the shore will be predominantly fine grained as coarser clasts are deposited well upstream. By contrast, short, steep drainages carry coarser materials to the coast. In Greece, there are relatively few large, perennial rivers with broad drainage basins (to name two, the Peneios and the Spercheios). Most rivers have a seasonal flow that is heaviest in the

winter months as a result of rains that trigger high-energy, swift-flowing torrents capable of transporting much coarse material. As a result, a typical stony beach will consist of a mix of coarser and finer material.

Free sediment is transported in the interface of coast and inshore waters in several ways (Summerfield 1991: 325; Wells 2001: 155–57). Tides and wave action move sediment continuously and more or less perpendicularly into and away from shore. Wind-driven waves can be significant agents of erosion and sediment transport on open coastlines, but because the Mediterranean is a virtually tideless sea, the effect of tides on coastal processes is minimal. Where offshore winds are strong and persistent, substantial amounts of airborne sand-sized and smaller grains can be deposited onshore (aeolian transport). Yet the dominant movement of sediments along Mediterranean coasts is due to oceanic currents (Fig. 5.2). Generally, the fine clay- to silt-sized sediments escape offshore in suspension and are carried away by oceanic currents. The coarser (sand-sized and greater) material ordinarily remains in the littoral zone, to be entrained in *longshore* currents, which transport material parallel to shore through a process called *longshore drift* (also known as *littoral drift*). The most important contributor to this material is alluvial sediment, but sediments from the erosion of coastal landforms as well as material previously entrained in ocean currents can also be present. The rate and volume of longshore transport along a coastline are controlled by current velocity and wave energy, as well as the angle at which waves strike the coast. The impact of longshore drift on coastal configuration depends on the presence or absence of features of coastal topography and inshore bathymetry that act to impede or facilitate sediment movement. Sediment remains in transit until a sediment sink drains it offshore or an impediment causes deposits to form against it and build up over time. Thus, on linear coasts, longshore drift may proceed with little interruption or effect on coastal configuration. Where coasts have irregular configurations, however, as is so often the case in Greece, longshore sediments become trapped against headlands, offshore islands, delta formations, and other prominent features (Fig. 5.2). These deposits contribute to the development of landforms such as barrier islands, spits, and sandbars, behind which lagoons form. The elongated form of these deposits reflects the prevailing direction and strength of the longshore currents. The long and complex history of longshore-derived landforms of coastal Elis shows these interactions quite clearly (Kraft et al. 2005). Coastal locations downcurrent from significant sediment traps are characteristically starved of sediment, and these features will be absent. Littoral sediments can also be

drained offshore by deep-sea canyons.

The overall contribution of sedimentation to coastline configuration can be measured in terms of a sediment budget: if the rate of sediment delivery exceeds the capacity for sediment transport away from the coastal zone, accretion will occur; if not, sediment will remain in transit until it reaches a sediment trap that captures it or conducts it out to sea. It is important to note that even at the local scale, erosion and sedimentation can co-occur. In the region of the lower Acheron River valley of southwestern Epirus, the tectonic structure of the linear Ionian coastline promotes coastal erosion and efficient longshore transport, while within the once-broad embayment at the mouth of the Acheron River, a sharply progradational sequence since the Neolithic period has been documented (Besonen et al. [2003](#)).



5.2 Movement of sediments along Mediterranean coasts. After Wells 2001: 156, fig. 6.3. Courtesy of University of Utah Press.

Coastal Landforms

The interaction of land, sea, and sky generates a wide array of coastal landforms, which in general terms can be categorized as *destructural* or *constructional* (Summerfield 1991: 325–41). The destructural group is smaller, comprising mainly wave-cut cliffs and shore platforms. The

constructional landforms are many and varied, including beaches, barrier islands and lagoons, estuaries and tidal features, deltas, coastal dunes, and reefs.

Coastal Cliffs and Shore Platforms

Coastal cliffs are steep, often vertical, slopes that rise above the shoreline. Fault-derived cliffs may plunge precipitously into deep water, suffering little erosion since wave energy against them is minimized by reflection of swell waves. In shallower waters, cliffs are susceptible to basal erosion by the action of breaking waves. Particularly on open coasts, wave action undercuts sea cliffs, cutting a notch around mean sea level. Over time, an overhang forms that becomes increasingly unstable and eventually collapses into the sea. This material, along with other gravity-entrained colluvium from the slope, is available for reworking and transport in the littoral zone. This erosional process forms recessive shorelines: as the coastal cliffs retreat, horizontal shore platforms are left behind at the basal level where wave cutting occurred. These wave-cut or *intertidal* platforms are common in Greece where high wave energies combine with easily eroded limestone strata. Once formed, they are subject to weathering and abrasion. The rate of cliff erosion varies over time: in particularly stormy years, wave energy and weather can accelerate coastal erosion. If the process continues, however, eventually the cliff will be protected because wave energy is expended crossing the platform.

The sequence of shore platforms and sea cliffs may leave physical traces on land or underwater, particularly where coasts are uplifted or submerged, respectively. The Corinthia in southern Greece preserves examples of both (Hayward 2003: 16–17; Pirazzoli et al. 1994; Wells 2001: 173–75, fig. 6.7). The northern Corinthian plain, bordering the Gulf of Corinth, comprises a stair-stepping sequence of risers and treads that represent Pleistocene coastal cliffs and shore platforms, subsequently uplifted and subjected to faulting and erosion. Beginning in the Neolithic period, these uplifted features were attractive locations for repeated human habitation because they afforded expansive views and defensive possibilities (Tartaron et al. 2006: 496). To the east, the Corinthian port at Kenchreai on the Saronic Gulf is partially submerged as a result of approximately 2.3 meters of tectonic subsidence over the last two millennia. As many as five submerged notches, cut by wave action, dissolution, and bioerosion, have been documented in and around Kenchreai, each representing a paleoshoreline formed during a period of relative sea-level stability

Beaches

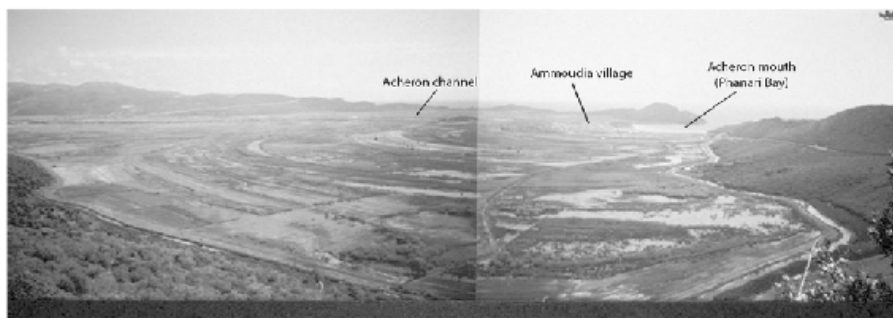
A beach is a shore built of unconsolidated sediment (Hamblin and Christiansen 1998: 398). Beach sediments form at the dynamic interface of land and sea, where the shoreline is constantly exposed to wave action and littoral currents. Most beaches consist of sand- or pebble-sized clasts (thus, sand or pebble beaches) because wave energy is usually sufficient to remove silt and clay from the littoral zone. Waves and currents sort beach sediments both vertically and laterally, and round and polish the clasts. These well-known processes produce a predictable set of sedimentary structures that allow the identification of fossil beach deposits (Wells 2001: 158, table 6.1).

Beaches are composed of both organic and inorganic material, but in Greece, carbonate pebble beaches are especially common because of the pervasive carbonate geology (limestone and other biogenic carbonates). Beachrock, intertidal sediment indurated by calcite or aragonite cement, forms readily because of the abundance of carbonate in solution in near-shore waters (Wells 2001: 158). Submerged or uplifted beachrock can indicate the approximate lateral positions of former shorelines, particularly in the nearly tideless Mediterranean.

The progradation of sediment seaward is sometimes manifest as sets of sandy, shore-parallel beach ridges and intervening swales. William Tanner (1995) identifies four types, based on their origin. The most common are *swash-built ridges*, which occur where there is a constant source of sandy sediments, but longshore currents are insufficient to remove them. The sediment is instead reworked by modest storm waves (swash) into narrow mounds with low relief along the shoreline. The lower-lying surface between the new ridge and the adjacent landward ridge floods seasonally, filling with sandy near-shore sediment (e.g., backswamp or marshy deposits), thus forming the ridge-swale set.³ This is a process of gradual accretion, with each ridge representing an old beach and the ridge system marking the advance of the shoreline seaward over time. Formation can be relatively rapid, however: Tanner (1995: 159–60) suggests an average interval of around 50 years for sandy swash-built ridges on ocean coasts. A striking example can be found in Greece at the mouth of the Acheron River in Epirus (Besonen et al. 2003: 216), where concentric accretionary beach ridges and swales have formed in historical times

in an embayment well sheltered from longshore currents (Fig. 5.3).

Beach deposits can also grow outward to join with an offshore island by a narrow neck known as a *tombolo*. This typically occurs because the offshore island behaves as a natural breakwater, creating a wave shadow along the coast behind it, where sediment begins to build outward from the shore. Subsequently, longshore drift moves sediments onto and around the tombolo (Hamblin and Christiansen 1998: 399; Fig. 5.4). Tombolos can enhance the natural qualities of an anchorage by creating a double-harbor configuration, and in historical times they were emulated by built causeways. The island of Mochlos off Crete's northern coast is believed to have been connected to the mainland by a tombolo in the Bronze Age (Branigan 1991: 97), and the same may have been true of the southern Cretan harbor at Kommos (Shaw 2006: 55).



5.3 View of the sequence of ridges and swales at the mouth of the Acheron River, Epirus. Courtesy of Nikopolis Project archives.

Estuaries and Tidal Landforms

An estuary is a partially enclosed coastal body of water that communicates with the open sea, but is protected from the action of open ocean waves by its topography or some form of barrier that absorbs and refracts wave energy (e.g., sand bars or barrier islands). Usually the term is applied to inlets into which rivers or streams flow, causing fresh and marine waters to intermingle (Fig. 5.5). These transitional zones between river and ocean environments experience both marine processes (tides, waves, saline water influx) and fluvial processes (freshwater influx, sedimentation), contributing diverse nutrients that make estuaries among the world's most productive natural habitats.



5.4 View of tombolo, Paximadi Cape, Euboea. Courtesy of Tim Bekaert.



5.5 View of an estuary in South Carolina, USA. Courtesy of the National Oceanic and Atmospheric Administration.

Estuaries trap fine-grained sediments, leading to the formation of a variety of landforms such as tidal mudflats, tidal marshes and swamps,

and tidal inlets. In the Aegean, where tidal currents are weak, mud and clay are deposited on shallow mudflats in the lower intertidal zone. In the upper (landward) intertidal zone, continued deposition of mud can cause vertical accretion and eventually the formation of a brackish marsh above the normal high tide level. These different landforms exhibit characteristic sedimentary structures and contents (Wells 2001: 158–59, 162). Mudflat sediments typically consist of a mix of silt and clay with a high iron content and in situ molluscan fauna. Tidal marshes are rich in peat, comprising very fine-grained clay and silt with a high organic content. In tectonically stable contexts, marshes build up and out, gradually infilling the estuarial basin.

Estuaries and their associated landforms are highly significant to the study of ancient coastlines. Because of their micro- and macrofossil content, as well as datable organic material, they provide key evidence for coastal evolution. Equally important is the fact that estuaries were a far more prominent feature of coastal landscapes in the Bronze Age than they are today, offering quiet environments ideal for anchorage; these would have been desirable harbor locations throughout the Mediterranean (Raban 1991). Great estuaries at major river mouths are obvious targets for Bronze Age harbors, but because of the tendency of estuaries to fill in over time, smaller estuarial harbors might only be revealed by systematic geomorphological prospection.

Barrier Islands and Lagoons

Lagoons are tidal inlets of shallow marine or brackish water that are separated from the sea by a barrier. Mediterranean lagoons are typically sheltered by barrier islands, which are elongated offshore sand ridges extending parallel to the shoreline and separated from it by the lagoon (Summerfield 1991: 330). Barrier islands range from a few meters in width and a few hundred meters in length to long islands a few kilometers in width and hundreds of kilometers in length. Lagoon waters are replenished by tidal inlets that perforate the barrier at irregular and migrating intervals. In response to changes in sediment supply, relative sea level, and climate, barriers may form, retreat landward, or disappear.

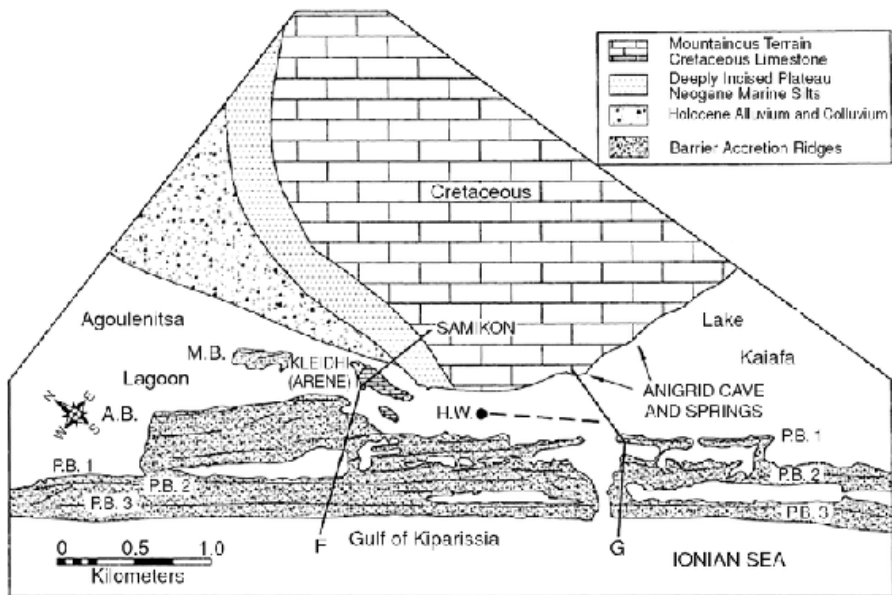
Lagoons fill with coarser sediment predominantly supplied by

longshore drift. Because lagoons are shallow, they are susceptible to infilling and are strongly influenced by precipitation and evaporation. When evaporation rates are high, salinity in a lagoon can exceed that of the sea, and stranded lagoons can form salt pans or salt lakes. The Akrotiri Salt Lake on the southern tip of Cyprus was probably part of a lagoonal system in the Bronze Age that was later isolated from the sea (Blue 1997: 35–38). Salt deposits were surely exploited in the Bronze Age for subsistence and trade.

The western coast of the Peloponnese is a prominent example of lagoon and barrier formation. On the coast of Elis, coastal landform change has been dominated for the last 8,000 years by longshore redistribution of sediments from the Alpheios and Peneus rivers into an extensive Holocene barrier accretion and lagoonal system (Kraft et al. 2005: 4; Fig. 5.6). In these settings, both sedimentation from fluvial inputs and erosion and littoral transport from high wave energy have shaped Elean and Messenian shorelines into long, sandy beach strands (hence, Homer's "sandy Pylos"). Hans-Jeorg Streif (1964, cited in Kraft et al. 2005: 5) identifies three major alluvial terraces in the Alpheios River system and correlates them with three episodes of coastal barrier accretion at the delta. These are roughly dated to EBA, LBA, and Classical to modern (in several subphases).

Deltas

Deltas form where rivers deposit sediment directly into a standing body of water, such as a lake or the ocean, more rapidly than it can be redistributed by coastal processes. The sediment load deposited by deltas into seas and estuaries creates progradational complexes of river sediments reworked by littoral or estuarine processes. There are two essential components of a river delta: (1) the delta front, comprising the shoreline and the gently sloping, submerged offshore zone; and (2) the delta plain, an extensive lowland area landward of the delta front, made up of active and abandoned distributary channels fanning out over the plain (Summerfield 1991: 333–36). The terrain between the channels is occupied by floodplains, levees, tidal flats, marshes, and lakes. All of these features can be recovered in a geological core, and organic material is usually available to establish a chronometric framework for the sequence.



5.6 Example of a lagoon and barrier system on coastal Elis. Kraft et al. 2005: 14, fig. 5. Courtesy of the Trustees of the American School of Classical Studies at Athens.

The structure and associated landforms of a delta depend on the interaction of the sediment-carrying stream with ocean currents and waves. Because in Mediterranean embayments, fetch – the distance wind can travel unimpeded by landforms – is limited and tidal effects are minimal, deltas are subject to limited modification by coastal processes (Summerfield 1991: 333). Thus, on a continuum of delta types dominated by tides, waves, and rivers, most Mediterranean deltas are fluviially dominated (Summerfield 1991: 334–35, table 13.4, fig. 13.22). Tectonic and climatic factors also play an important role in delta morphology (Summerfield 1991: table 13.5). If a delta region is tectonically stable, the delta plain will aggrade as it progrades; if subsiding, it will form overlapping sedimentary lobes as it progrades; and if rising, river distributaries will cut down into and rework previously deposited sediments. Precipitation and temperature control the type and amount of the vegetation cover. Once rooted, plants trap sediments and contribute to the formation of peat.

The evolution of Mediterranean river deltas since the mid-Holocene deceleration of marine transgression has been the work of both natural and human agents. As sea-level rise slowed, river sediments began to aggrade (build vertically) and prograde (build laterally seaward) in sheltered and shallow marine embayments. Wave energy

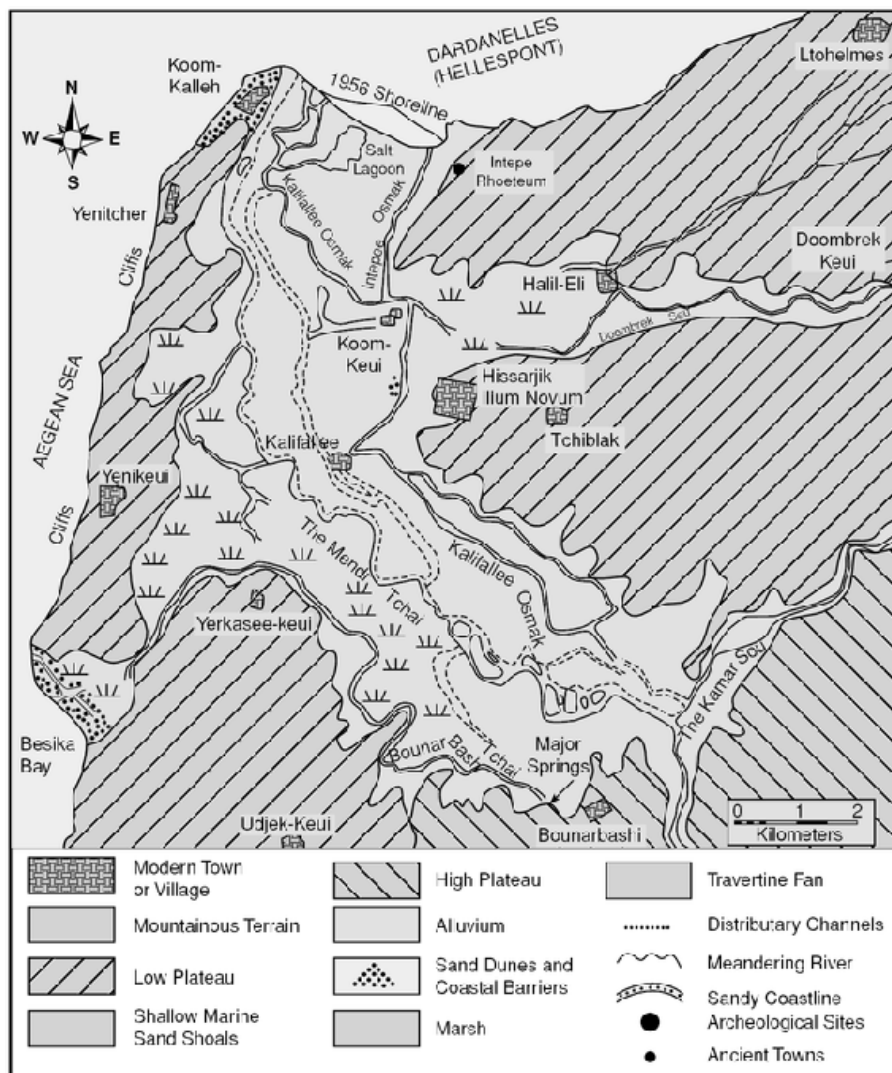
was low, and thus erosion and littoral transport were not prominent mechanisms. Instead, the deltaic material prograded gradually toward the open sea in a landscape of multiple active and abandoned river channels, distributary levees and swamps, brackish to saline lagoons, and isolated ponds or lakes ranging from saline through freshwater (Fig. 5.7). At Troy, it was only as the delta coast approached the Dardanelles that littoral currents and increased wave action deposited sands in nearshore shoals and beaches (Kraft, Rapp et al. 2003: 164), and the same is true of the Maeander River, across the mouth of which a long, arcuate barrier ridge has developed in recent times (Brückner 2003). Kraft and colleagues (Kraft, Kayan et al. 2003: 367, fig. 4) cite the delta of the Spercheios River, emptying into the Gulf of Malia on Greece's eastern coast, as a modern analogue where similar landforms produced by the progradation of the river delta can be observed. There, a complex landscape of meandering levees and backswamps, distributional channels, and pervasive coastal marshes has formed as the delta gradually progrades into the deep, sheltered Gulf of Malia. Because of the absence of high wave energy and littoral drift at the current delta shoreline, no coastal barriers have formed.

Coastal Sand Dunes

Coastal sand dunes can form in a range of settings, including deltas, coastal plains, and embayments. They are aeolian landforms that develop where certain conditions exist: coastlines where waves and currents interact with abundant loose, sand-sized sediments available for transport; persistent onshore or alongshore winds blowing for at least part of the year at 16 kilometers per hour or more; and flat or low-relief terrain immediately inland of the coastline (Bauer and Davidson-Arnott 2002; Martínez et al. 2004; Pye 1983). Dune formation occurs when winds blow dry sand particles landward from the beach; the main sources of the sand are exposed offshore sandbars and river-mouth and other backshore sediments. Objects inland from the coast, such as plants, logs, or human constructions, interrupt the wind flow, causing sand to be deposited in drifts around them. These drifts act as barriers to sand movement, and grow over time to landforms ranging from small hillocks to vast dune systems tens of meters in elevation.

Sediment supply is the key limiting factor to dune formation. Fluvial systems are noteworthy for the large amount of sediment that they can contribute to dune formation: the Nile River has supplied sufficient sands to result in the formation of vast belts of dune ridges

(El Banna and Frihy 2009). In Greece, coastal dunes are common, but because of the prevalence of rocky (as opposed to sandy) shorelines and mountainous coastal topography, long, continuous coastal dune systems such as are found on French or Dutch coastlines are rare. Instead, coastal dunes tend to occur in isolated embayments between promontories and cliffs, or as more extensive but discontinuous coastal dune systems, for example in the western Peloponnese or on Euboea's eastern coast (Heslenfeld et al. 2004: 338; Spanou et al. 2006: 235–37, fig. 1). They tend to exist where barrier islands or wave-dominated depositional landforms occur, often as integral elements of barrier and lagoon systems (Kraft et al. 2005).



5.7 Formation of the Scamander plain, Troy. Kraft, Kayan et al. 2003: 365, fig. 2. Courtesy of Springer Science + Business Media.

Coastal dunes perform several functions beneficial to the stability of coastlines and potentially to humans as well. They shield low-lying coastlines from violent storm winds and waves, and inhibit coastal erosion. They protect against saltwater intrusion into wetlands and dry lands behind them, and they support a diverse flora and fauna (Spanou et al. 2006; Sýkora et al. 2003). Thus, they form an integral part of coastal ecology and the resources to be found there.

The Anthropogenic Contribution

The human role in coastline formation has been conspicuous in two processes: the acceleration of sedimentation to prograding river deltas, and the creation of artificial harbors. It has long been noted that the shift to settlement in sedentary agropastoral communities in the Mediterranean coincided with mid-Holocene delta formation and shoreline progradation in the estuaries that had resulted from the late Pleistocene–early Holocene marine transgression. Human agency in soil loss – caused by stripping vegetation cover through forest clearing, agriculture, and grazing – has been implicated in increased sediment load to streams and the resulting expansion of deltas and related coastal landforms. But it is not easy to demonstrate a primary human role in this process, particularly for periods as remote as the Neolithic and Bronze Ages. There are three related problems: contemporaneity, causality, and degree of impact (Halstead 2000). The palynological, geoarchaeological, and archaeological data used to assess human impact on sediment load to coastal areas can often be dated only approximately, with the result that the contemporaneity of the impacts seen in these data sets is highly uncertain. Even when the chronological correlation is fairly secure, human causality, as opposed to a variety of climatic and other environmental changes, can be difficult to establish. Finally, the magnitude of the human impact, given the level of population and the specific activities in which communities were engaged, must be evaluated. Can it be demonstrated that Bronze Age population levels in and around coastal drainage systems were sufficiently large and their subsistence practices sufficiently destructive to account for significantly accelerated delta formation and coastline progradation?

In Greece, the most detailed documentation of putative human agency in landscape destabilization resulting in erosion and catastrophic soil loss comes from the southern Argolid. The regional

surveys of the Argolid Exploration Project in the 1970s to the 1990s amassed a large body of geological and archaeological data that seemed to indicate human agency in certain episodes of massive Holocene soil erosion (Runnels 1995, 2000; van Andel et al. 1986, 1990; Zangger 1994a). One of these (the Pikrodafni alluvium) was dated broadly by pottery sherds to the end of EH II, and was concentrated in valleys where FN–EH II settlement was extensive (van Andel et al. 1986: 113). The Pikrodafni alluvium is dominated by debris flows: “...chaotic beds of ill-sorted, largely angular boulders, cobbles, and pebbles, surrounded and supported by a matrix of finer material” (van Andel et al. 1986: 111), likely the result of sheet erosion of slopes made vulnerable to soil loss when vegetation cover was devastated by drought, fire, or clearing. Although a change of climate to drier conditions that reduce vegetation may instigate sheet erosion and result in debris flows, the investigators attributed the Pikrodafni alluvium to careless slope clearance and the “...eventual failure of EH agriculture to contain the loss of soil” (van Andel et al. 1986: 117). This conclusion has been questioned on the grounds of chronological and causal ambiguity as outlined above (e.g., Bintliff 1992; Butzer 2005; Endfield 1997; Moody 1997, 2000; Whitelaw 2000). This debate highlights the problems and underscores the need to assess each event on its own merits before wider inferences about regional land–human relationships can be made.

In general, it is unlikely that the effect of human subsistence activities was such that large natural harbors were strongly affected in the Bronze Age, and particularly it is doubtful that humans made a greater contribution to sedimentation than the combination of climatic oscillations and natural sediment transport after the mid-Holocene stabilization of eustatic sea level. This conclusion is supported by much geomorphological research that shows that rapid infilling of major natural embayments and estuaries in the eastern Mediterranean has been a phenomenon of much more recent times (Brückner 2003: 122–25; Kraft, Kayan et al. 2003; Raban 1991). On the other hand, small natural inlets and harbors based on barrier and lagoon systems must always have been more susceptible to both anthropogenically and naturally induced sedimentation (Kraft et al. 2005), migrating and going in and out of practical use with much greater frequency.

The creation of artificial harbors in the Bronze Age Aegean is unlikely, but cannot be ruled out entirely. This kind of harbor is an artificial estuary or lagoon, where breakwaters have been constructed

to reduce wave energy, creating a quiet and sheltered environment in which vessels may operate. At the same time, by minimizing the normal forces of waves and littoral currents, artificial harbors promote the net accumulation of sediment. A universal feature of artificial harbors is that they must be maintained by dredging or by some means of flushing sediment from the harbor basin. All of the processes that occur in natural estuaries also occur in artificial harbors, but they may be accelerated due to intensive human presence. Because the maintenance of harbors responds to the ebb and flow of political and economic conditions, the eventual infilling and abandonment of artificial harbors are all but inevitable (Wells 2001: 171).

Artificial harbors leave distinctive signatures in the geoarchaeological record, which allow them to be distinguished from natural harbors. Nick Marriner and Christophe Morhange (2007: 175–77) have identified a fairly consistent geomorphological sequence repeated throughout the eastern Mediterranean, which they term the “Ancient Harbour Parasequence” (AHP). The AHP comprises the depositional history of the harbor basin, from the natural pre-harbor state to postabandonment, with the following surfaces (boundaries) and deposits (facies):

- (1) The Maximum Flooding Surface (MFS) marks the maximum marine transgression circa 6000 BP. It forms the lower boundary of the sediment archive, and laterally the farthest landward position of the coast. The deposit is characterized by coarse sand and pebbles.
- (2) After 6000 BP, beach sands began to aggrade naturally, overlaying the MFS with little or no human contribution. Net sediment supply increased as the coastline prograded and the basin began to fill.
- (3) The Harbour Foundation Surface (HFS) marks the incipient human modification of the basin, in the form of built harborworks, to create a sheltered harbor basin. A sharp transition from coarse beach sands to fine-grained silts and clays characterizes the sedimentology of the harbor basin. In most of the Mediterranean, this surface postdates the Bronze Age. Human exploitation of natural low-energy basins in the Bronze Age is rarely measurable on the basis of granulometry, but can sometimes be detected in subtle patterns of molluscan micro- and macrofossil assemblages (Marriner and Morhange 2007: 176).
- (4) The Ancient Harbour Facies (AHF) refers to the stratigraphic sequence of deposits during active use of an artificial harbor.

Enhanced harbor engineering through time is evident in increasingly fine deposits (silts and plastic clays) through the Roman period, and remnants of harbor architecture (moles, breakwaters, quays, etc.), artifacts, and other anthropogenic debris are often present. The AHF may generate a diagnostic assemblage of macro- and microfauna, as well as a strong geochemical signature from human pollutants.

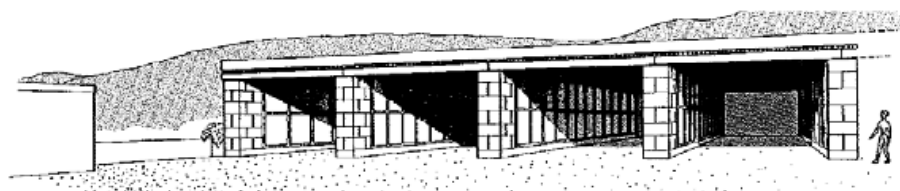
- (5) The Harbour Abandonment Surface (HAS) records the initial (semi-)abandonment of the harbor basin, often after the Late Roman period. It corresponds to the deterioration or abandonment of maintenance of harbor infrastructure, and is marked by a transition from fine-grained harbor silts and clays to coarse sands and gravels.
- (6) The Harbour Abandonment Facies (HAF) registers a return to “natural” conditions after the harborworks have deteriorated to the point that the basin is exposed to higher-energy wave action and the formation of coarse-grained sand and gravel beaches.

The Ancient Harbour Parasequence framework has been applied by this investigative group to ancient harbors including Beirut (Marriner et al. 2008), Sidon and Tyre (Marriner and Morhange 2006), and Marseille (Morhange et al. 2003), and they have also fitted the geostatigraphy of other harbors, such as Caesarea Maritima (Reinhardt and Raban 1999), into this scheme (Marriner and Morhange 2007: 172–74, fig. 29).

Natural versus Artificial Harbors in the Mycenaean World

As observed above, it is widely assumed that neither artificial harbor basins nor durable built harbor infrastructure existed in the Aegean Bronze Age. Centuries later, Homer and Hesiod were barely aware of artificial harbors (Morton 2001: 106), and the image of Odysseus’ crews dragging their ships onto sandy beaches has been held up as representing standard practice in the Bronze Age. But is this really the case? Blind acceptance of the notion that all Bronze Age harbors were natural, and that ships were simply pulled up onto sandy beaches in the Homeric style (e.g., *Iliad* 1.485–86), has been justly criticized by Avner Raban (1991: 136) on the grounds that it has prevented investigators from looking for artificial harbor works or from

accepting evidence for them. Nevertheless, to date there remains little evidence for built harbor infrastructure in the Mycenaean world. The Minoans, perhaps because of their earlier contact with Egyptian and Near Eastern seafaring societies, seem to have been more advanced in this respect. At a small number of Cretan coastal sites, large buildings divided into long, narrow galleries have been interpreted as ship sheds, used for storage of ships and nautical equipment during the winter months.⁴ The clearest case is the excavated Building P at Kommos (J. Shaw 1990; M. Shaw 1985; Shaw and Shaw 1999; Fig. 5.8); at more than 37 meters long and 5.6 meters wide, the galleries of Building P could accommodate the largest of the ships depicted in the Akrotiri Flotilla Fresco (see Table 3.1). Other candidates for ship sheds include the “Shore Building” or “Shore House” at Gournia (Fotou 1993; Shaw and Shaw 1990: 852, n. 16; Watrous 2010), as well as unexcavated foundations and cuttings at Malia and Nirou Chani (Marinatos 1926: 146; Raban 1991: 139–40; Shaw 1990: 425–28). Elsewhere, cuttings and ruins of built features have been proposed as channels, moles, and tomboles associated with Minoan harbors (Chrysosoulaki 2005; Hadjidaki 2004: 54–56). These features cannot at present be dated directly; typically, they are considered to be Minoan based on close spatial, but not stratigraphic, association with remains of Minoan buildings or artifacts. Nothing comparable has been identified on the Greek mainland.



5.8 Reconstruction of ship sheds at Kommos. Shaw 1990: 425, fig. 9, drawing by Giuliana Bianco. Courtesy of the Trustees of the American School of Classical Studies at Athens.

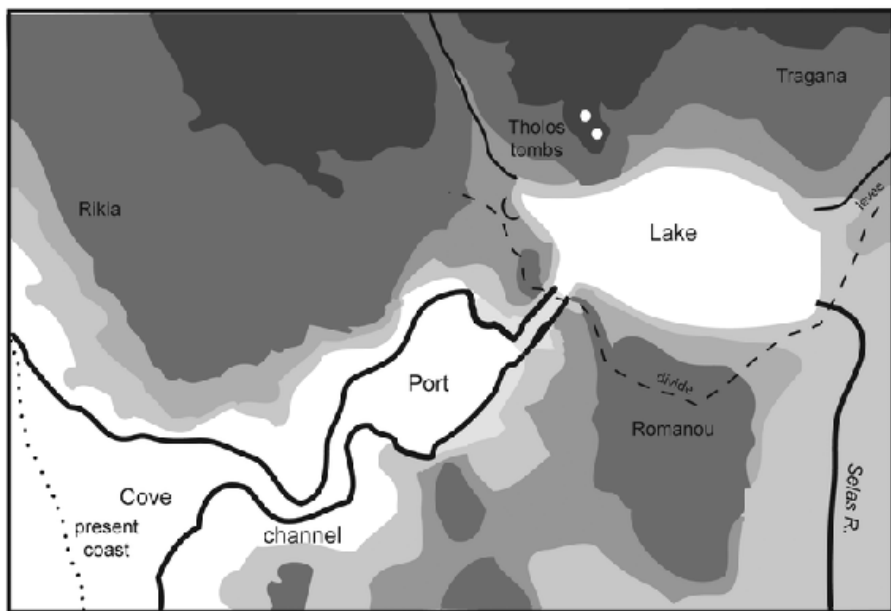
Even the well-dated Building P is beset by interpretive issues that are crucial for the present discussion. Building P was constructed over the ruins of LM I Building J/T during pottery phase LM IIIA2, corresponding to the later fourteenth century BC. This was a time of new beginnings in the Mesara region; at nearby Ayia Triada, a megaron-style building was constructed, similar to contemporary Mycenaean megara on the mainland. A spirited debate continues on whether the Mycenaean exercised political control over large parts of Crete during this time. If so, Building P could be a Mycenaean construction, as it has sometimes been called (Haggis 2003; Yasur-

Landau 2010: 50). The excavators do not share this view, however (Shaw and Shaw 1997). They find no close parallel for Building P on the Mycenaean mainland, and they continue to believe that the Mycenaeans exercised neither direct political control nor extensive cultural influence over the Mesara in the Late Bronze Age. Instead, they point to iconographic evidence for the non-Mycenaean origin of the Cretan ship shed (J. Shaw 1990: 429–32; M. Shaw 1985). At Akrotiri, a portion of the Flotilla Fresco on the north wall of Room 5 depicts soldiers marching to the right of a large building partitioned into narrow, open galleries facing the shore, very similar in form to Building P. The fresco at Ayia Irini on Kea depicting a seaside scene may also preserve the corner of such a building (Shaw 1990: 430–31).⁵ The idea of an earlier Minoan tradition finds support at Gournia: on the putative ship shed there, Vance Watrous (2010: 13) comments, “Similar in material, masonry, and monumental scale to the palace at Gournia, the ship-shed galleries seem to have been built at roughly the same time as the palace, probably in MM IIIA.” Thus, the Cretan ship sheds bring us no closer to definitive proof of Mycenaean built harbor infrastructure.

If the Mycenaeans did not erect built structures to enhance coastal topography, in one case at least they seem to have created an artificial harbor basin at a remove from the coastline. At Romanou near Pylos, according to Eberhard Zangger and associates, the Mycenaeans created an artificial harbor basin by means of a sophisticated hydraulic engineering project (Zangger et al. 1997: 619–23; Fig. 5.9). A natural depression comprising soft fossil dunes some 500 meters from the Bronze Age shoreline was widened and deepened to serve as the harbor basin. A channel approximately 40 to 50 meters wide was dug to connect this basin to a small natural cove at the coast that had probably been the original anchorage. To prevent longshore sediments from silting up the harbor basin, the perennial Selas River was diverted upstream to provide a steady flow of clean water to flush the basin. The Selas was first diverted into a lake, and from there an outlet controlled the outflow of clean overspill water, which was conducted by an artificial canal to the harbor basin. The diversion of the Selas River has been dated to the LBA by establishing the radiocarbon chronology of a sharp drop in terrestrial sediments in cores from the Osmanaga Lagoon, the natural outlet for the river prior to the diversion (Zangger et al. 1997: 622). The result was a sheltered and readily defensible inner harbor.

The components of this harbor virtually disappeared from the

landscape once the authority that maintained it was gone; it was only recognized through a careful and expert geomorphological analysis, and to date remains the only known Mycenaean artificial harbor. Nevertheless, this approach to harbor construction is entirely in keeping with the ambitious hydraulic engineering projects at which the Mycenaeans excelled, the most prominent being the drainage and water management of the Kopais Basin in Boeotia (Knauss 2001), and the Kofini Dam near Tiryns (Zangger 1994a). The work of geomorphologists reminds us that Bronze Age coastal features, whether natural or artificial, are difficult to detect, yet it is possible to read them from the modern landscape if one is attuned to the traces they leave behind and adept in the techniques for recovering them. Although it is unlikely that many harbors as elaborate as the one at Romanou existed in Mycenaean times, this discovery does provide an example of the kind of harbor engineering of which the Mycenaeans were capable, and offers impetus to continued search for other engineered harbors.



5.9 Hypothetical reconstruction of an artificial harbor at Pylos.
Drawing by Felice Ford after Zangger et al. 1997: 619, fig. 46.

Apart from natural harbors that were used during the Bronze Age, a variety of coastal wetlands could be exploited for diverse uses and resources. Deltas, estuaries, and lagoons are merely part of a broader series of coastal landscapes characterized by high biomass and biodiversity, which may also include lakes, bogs, river floodplains,

spring-fed wetlands, and seasonally inundated dolines and poljes (Van de Noort and O’Sullivan 2006: 36–64). From such coastal settings in the Mediterranean, resources were readily available such as reeds and rushes for architectural construction; clay for pottery, mudbrick, and other architectural applications; and fish, waterfowl, amphibians, and mollusks.⁶ Wetlands are underappreciated as a resource for Bronze Age communities partly because in the modern world their settings are peripheral and they are rapidly disappearing through reclamation and other forms of human interference.

Geoarchaeological Methods for Reconstructing Coastal Landscapes

The investigation of ancient coastal landscapes by geoarchaeological means is a well-established tradition with a rich literature, but one that continues to evolve with technological advances and new perspectives influenced in part by recent trends in landscape archaeology, giving rise to a “theoretically informed landscape approach” (Breen and Lane 2003: 469–70; Marriner and Morhange 2007: 180). The methodology of coastal geoarchaeology involves extensive work in both the field and laboratory, and a wide range of materials as proxies for past conditions and processes. The basic principles and techniques are widely published and demonstrated by case studies (e.g., Marriner and Morhange 2007; Rapp and Hill 1998: 75–81; Summerfield 1991: 313–42, 433–55; Wells 2001). To be truly effective, these techniques must be performed in combination, and to realize their potential to illuminate the human past, they must be integrated with archaeological investigation.

The purpose of this section is to summarize the elements of a robust geoarchaeological investigation of a coastal landscape, following the framework outlined by Marriner and Morhange (2007; see also Brückner 2003: 125–26; Goiran and Morhange 2003) that broadly divides the work between field and laboratory techniques.

Field Techniques

Geomorphological survey involves the initial mapping of coastal landforms, typically starting from maps (geological, topographic, soils), images (satellite, aerial photographs), and archaeological

information (chronological, distributional) on sites and features in the coastal zone. These documents may reveal a wealth of information, and form a baseline for the research design. High-resolution satellite images and low-altitude aerial photographs often yield visual evidence for coastal landforms, such as barrier and lagoon systems, or evidence for ancient harbors, such as uplifted harbor basins or submerged harbor installations (Fig. 5.10).

Subsequent ground truthing, both on land and under water, allows natural and anthropogenic features to be studied firsthand in order to form provisional hypotheses about the morphology, genesis and developmental sequences, and chronology of coastal landforms. In many cases, landforms may be visible, for example, dune ridges, infilled lagoons, estuaries, river and stream features, beach ridges, and fossil sea cliffs, but they must be constrained chronologically and present morphologies should not be extrapolated to the past without detailed analysis. Indications of sea-level change may be apparent in submerged buildings, stranded harbor basins, wave-cut notches on fossil sea cliffs, erosion benches (platforms), and other terrestrial and underwater features. Road cuts, irrigation ditches, foundation trenches, and eroded coastal cliffs are common targets of opportunity providing windows onto past depositional and erosional sequences. There are two essential principles that must guide observations about sea-level change, however. First, the critical consideration is *relative* sea level; that is, the relationship between land and sea at any location is affected by erosional, depositional, and tectonic processes, and not merely by the absolute changes suggested by global or regional eustatic sea-level curves. Consequently, the second principle is that each coastal location has its own relative sea-level curve, determined by local tectonic controls as well as distinct erosional and depositional characteristics. Rapp and Kraft (1994: 73) emphasize that composite regional sea-level curves, or those borrowed from “nearby” localities, usually lead to errors in interpretation.



5.10 Aerial photograph of submerged harbor remains near Naples. Reprinted from Marriner and Morhange [2007](#): 151, fig. 13, with permission of Elsevier.

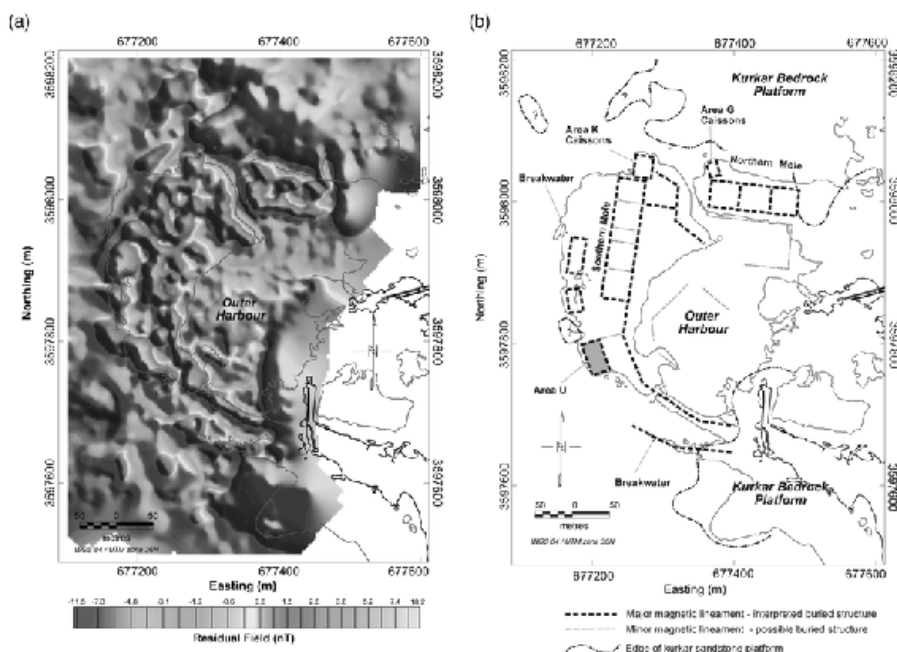
Observations of visible coastal landforms and archaeological features often form the basis for speculation regarding the layout and date of ancient harbors. This tradition is particularly strong with respect to purported Minoan harbors on Crete (Chryssoulaki 2005; Hadjidaki 2004; Marinatos [1926](#); Raban [1991](#); Shaw [1990](#)). Typically, the evidence might include artifact concentrations, foundations of Minoan-style walls extending into the sea, anchors found in the nearby sea bed, or cuttings in bedrock that cannot be dated. The arguments for the existence of these harbors often cite the prominence of Minoan seafaring in the Bronze Age (Chryssoulaki 2005; Hadjidaki 2004), an important consideration but not a directly relevant form of evidence. Thus, although reasonable hypotheses may be derived from archaeological observations and general historical arguments, little can be said with real conviction, and little detailed information can be obtained, in the absence of a full geoarchaeological assessment. Marriner and Morhange (2007: 162) cite the cautionary tale of the harbor at Kition-Bamboula on Cyprus, which two researchers depicted as a cothon based on modern engravings and field observations, before a geoarchaeological investigation revealed this to be erroneous (Morhange et al. [2000](#)).

Geophysical survey employs nondestructive techniques to detect remotely subsurface features on land and under water. In terrestrial

archaeological contexts, extensive use has been made of ground-penetrating radar, magnetometry, electromagnetics, and resistivity (Kvamme 2003; Sarris and Jones 2000). Each instrument and technique has its optimal use conditions and detection characteristics. Because harbors and other coastal features are often buried in sediment, geophysical surveys can frequently reveal the outlines of buried features, provided that their properties (magnetism, conductivity, density, etc.) contrast sufficiently with the surrounding matrix, and that they are located vertically within the detection limits of the geophysical instrument. An excellent example is the buried harbor and urban area of Portus, where Simon Keay and colleagues integrated the results of magnetometry, resistance survey, ground-penetrating radar, and electrical resistivity tomography to reveal much of the plan of Rome's principal imperial port (Keay et al. 2009). These results were confirmed and expanded with programs of coring and excavation.

Comparable techniques can be used to detect features on the sea floor and buried in marine sediments beneath it, typically by towing geophysical equipment on a rig attached to a small boat. Side-scan sonar and sub-bottom profiler surveys are used to create bathymetric maps that measure depths of sediment and bedrock, giving indications of the shape and orientation of ancient harbor basins over time (Lafferty et al. 2006; Papatheodorou et al. 2001). Marine magnetic surveys are well established and have often yielded spectacular results where underwater features with strong magnetic signals are present. A magnetic survey off the coast of Caesarea Maritima in Israel – Herod's Roman harbor – has clarified a number of questions concerning its construction and use. The magnetic data revealed the hydraulic concrete foundations for the ruined harbor moles by detecting the volcanic ash (pozzolana) in the concrete as a strong magnetic anomaly (Boyce et al. 2004; Fig. 5.11). These results allowed new interpretations of the shape and construction of the now-submerged outer harbor, defined by the moles and additional breakwater structures. Detected in the same survey were numerous low-relief mounds with elevated magnetic signals, on the sea bed beyond the outer harbor. These features, subsequently investigated by jet probing and excavation, turned out to be ships' ballast piles, identified by a mixture of igneous and metamorphic boulders and fired pottery exhibiting strong magnetic properties (Boyce et al. 2009). It was even possible, through careful mapping and examination, to hypothesize the formation process of the ballast piles by ships anchored around a designated anchorage point (Boyce et al. 2009: 1524). Ballast piles associated with Bronze Age pottery have recently been discovered off

the Saronic Gulf coast at Kalamianos (Tartaron et al. 2011; see Chapter 7).



5.11 Plan of submerged remains at Caesarea Maritima. From Boyce et al. 2004: 132, fig. 8. Reproduced with permission of Blackwell Publishing Ltd.

Geophysical techniques are nondestructive and non-intrusive, yet they can often supply rapid and reliable information about the location, depth, and nature of buried or submerged features without excavation. They may play the key role of guiding subsequent coring and excavation strategies, and more generally helping to form hypotheses and research questions. A geophysical project will more than pay for itself if it saves the investigator from a misguided research design. There are also disadvantages to geophysical surveys. There is no chronological control on the stratigraphy and archaeological features they detect, and the interpretation of anomalies often involves a high degree of subjectivity if their forms and signals are not transparently characteristic of known features. Ground truthing, in the form of excavation, coring, or other means of direct examination, is usually required to verify the identity of potential archaeological features. The entire enterprise of archaeological geophysics relies on a high level of expertise and expensive equipment that may not be easily available or affordable. Nevertheless, geophysical surveys are indispensable for the

investigation of buried harbors and submarine features.

Coastal stratigraphy is the central concept of the geoarchaeological method, which entails direct observation of the geological record to locate, characterize, and reconstruct physical evidence of natural and anthropogenic processes that contribute to the long-term evolution of coastal environments. As we have seen, observations of the modern surface can be misleading or ambiguous in their relationship to the past, but all major processes that generate change (cited above) leave a record in local sediments that can be decoded by careful analysis. Ideally, one would excavate a number of sections of the vertical and horizontal dimensions of coastal and underwater sediments, but this approach is rarely feasible in terms of resources (including time and money) and permissions. Thus, geological core drilling⁷ is the method of choice to obtain sediment samples for analysis. The decision about where to sample and how many cores to take is a critical aspect of the research design. Although it is obvious that enhancing the resolution of the study, that is, by increasing the number of cores and decreasing the spatial interval at which they are taken, should lead to higher confidence in the results, given the usual constraints a well-rationalized sampling design is of the utmost importance. Moreover, no coring program, no matter how large or well designed, will provide all the answers hoped for, but will generate new questions that can only be addressed with further research. A perfect illustration is the decades of coring work dedicated to reconstructing the marine embayment and coastal paleogeographies of ancient Troy (Kraft, Kayan et al. 2003; Kayan et al. 2003). Hundreds of cores have now been taken and analyzed from the plain around Hisarlik, yet although the general outlines of the evolution of this coastal landscape are reasonably well understood, the details of interpretation continue to be debated and new questions remain to be addressed.

Many macroscopic attributes of the core sample are described in the field, using one of a number of recording systems (e.g., Folk 1980). In the lower Acheron River valley of southern Epirus, Mark Besonen and colleagues recorded lithology, grain-size distribution, color when wet using the Munsell soil color chart, sediment consistency, plant and animal macrofossils, pedogenic characteristics (structure, sesquioxide/reduction mottling, and calcium carbonate filaments or nodules), and chance finds such as pottery fragments (Besonen et al. 2003: 209). The depth of the core varies with the equipment used and the nature of subsurface layers encountered. Hand-augering is the conventional technique, because the instrument is portable and widely

owned by earth science departments and private geological firms. With hand-operated equipment, it is not uncommon to reach impenetrable stony layers well before the maximum length of the auger. More elaborate power corers generally do not have this limitation (Kayan et al. 2003: 382–84), but their use is far more expensive and they may not be readily available in country. Once the attributes of the core are described, all or part of each sediment column is packed in aluminum foil or some other protective material for transport to the laboratory.

Laboratory Techniques

The core that reaches the laboratory preserves a stratified, and thus diachronic, record of the sedimentary sequence at a specific location. It is a storehouse of information, but decisions must be made about the tests that will be performed and the materials that will be tested, as well as the resolution at which the examinations are to be made. The tighter the sampling interval, the higher the resolution of the data and the better the reconstruction of coastal stratigraphy and coastal history (including chronology); Marriner and Morhange (2007: 165) recommend five centimeters or less. Time, money, and expertise for analysis are costs that should be resolved before coring begins.

After initial description of sedimentary structures, the cores are separated into subsamples to be used for analyses of different proxy materials. These analyses broadly involve sedimentology, biostratigraphy, and geochemistry.

Sedimentological analysis allows the investigator to characterize the sedimentary structures of a core sample and to identify the environmental *facies* that are represented in the stratified deposit.

The structural characteristics of the sediment provide important clues to the depositional environment and the source of the material that formed the deposit. Typically, subsamples are analyzed for color, grain size, microfossils, organic matter, and calcium carbonate content; organic material is extracted for radiocarbon (usually AMS) dating and sherds or other cultural material are noted (Jing and Rapp 2003: 159, fn. 4).

Granulometry – the analysis of grain size, shape, sphericity, roundness, and sorting of clastic particles in a sediment – can indicate

the mechanisms of transport and deposition and distinguish between high- and low-energy formational environments in a coastal area. Sediment texture refers in part to the range of particle sizes present; these are determined by a process of wet and dry sieving to separate the gravel-, sand-, silt-, and clay-sized fractions (Rapp and Hill 1998: 22–23, figs. 2.2, 2.3). These fractions are then weighed and their relative proportions are plotted graphically and statistically. The resulting ratios can indicate different kinds of coastal environments; for example, predominance of gravel and sand may indicate a fossil beach; predominant sand may indicate littoral deposits such as sandbars, barrier reefs, and islands; and predominant silts and clays may indicate an artificial harbor basin. The association between grain size distribution and paleolandform is not always straightforward, however. Rapp and Hill (1998: 38–39) identify five factors influencing grain size distribution: (1) the type of source rock and the original size of grains; (2) the type of transporting medium; (3) abrasion and solution during transportation; (4) sorting of size fractions before deposition; and (5) the depositional environment. Thus, the sources of sediment (e.g., fluvial, aeolian, longshore), the distance of transport, and the reworking of sediments in the coastal environment are some of the variables in working back to coastal paleoenvironments. Artifacts that may be present as clasts in the sand- and gravel-sized fractions are of great interest when recovered from cores.

Cores are also sampled for biogenic material, which can provide conclusive evidence for the depositional environments in which particular species lived. *Biostratigraphy* entails the identification of fossil organisms and the study of their temporal and spatial distribution in order to record the changing abundance and species composition, and thereby to reconstruct the depositional environments (biofacies) that these organisms characterize. The main fossil types are marine mollusks, ostracods, and foraminifera, each being both abundant in coastal waters and specific in its environmental tolerances to depth, salinity, and temperature.⁸ For this reason, they are excellent indicators of depositional environment and accordingly are used widely in paleoenvironmental reconstruction of coastal regions.

There are different advantages and disadvantages to these fossil types. Marine mollusks tend to be abundant, with known environmental tolerances by species. In situ shells are useful for radiocarbon dating. Mollusk shells are often the primary component of coastal middens that may be detected during archaeological or

geomorphological survey. Ostracods are microcrustaceans that leave a calcite bivalve carapace, the morphological characteristics of which can provide taxonomic and phylogenetic information (Marriner and Morhange 2007: 170). They tend to be ubiquitous in both fresh and marine waters, their carapaces preserve well, and because of their small size a great number can often be extracted from a core subsample. They are excellent indicators of paleoenvironment because their composition, population density, and population diversity vary as a function of water temperature, water salinity, water depth, and anthropogenic impacts (Marriner and Morhange 2007: 170). As a result, ostracod species are strongly correlated with very specific depositional environments.

Foraminifera are single-celled organisms with tests divided into chambers that accumulate during growth. They are among the most ubiquitous shelled organisms, often yielding more than one million living specimens per cubic meter, and they live in all marine habitats from intertidal to deepest ocean, from tropics to poles. Their mineralized tests preserve well, so a small sediment sample is likely to provide a large and statistically valid assemblage. They do not, however, live in freshwater environments, and only a few species live in brackish contexts. Further, individual species are highly specific to environment and are quick to respond to environmental change. Thus, foraminifera are highly useful for determining a range of paleoenvironmental characteristics, including sea-level change, paleoclimate, temperature, salinity, carbonate chemistry, diet, and nutrient conditions (Marriner and Morhange 2007: 170).

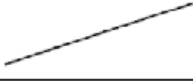
In the laboratory, fossil organisms are extracted and assigned to general ecological assemblages or *biofacies*, such as freshwater, brackish lagoon, marine lagoon, coastal, and marine. These categories are determined, as explained above, on the basis of the environmental tolerances of the species present, but also by *geochemical analysis* to determine the stable isotope ratios of oxygen and carbon in the shells of ostracods and foraminifera. The ratio of the two stable isotopes of oxygen, ^{16}O and ^{18}O , in ocean waters is a function of global evaporation rates, which in turn are proxy measures for long-term climate fluctuations as well as water temperature and salinity (for principles, see Rapp and Hill 1998: 104–105). This ratio is also recorded in the shells of fossil marine and freshwater organisms because the shell is formed by the precipitation of carbonates from the surrounding water. The $^{18}\text{O}/^{16}\text{O}$ ratio, expressed as variance from present mean sea water ($\delta^{18}\text{O}$ in parts per thousand [‰]), is

determined mainly by the temperature and salinity of water; negative values record progressively depleted ^{18}O and consequently warmer and less saline water, while positive values reflect enriched ^{18}O and colder, more saline water (Deith 1988). Similarly, the ratio of the two stable isotopes of carbon, ^{13}C and ^{12}C , imparts information about temperature and salinity as well as the presence of carbon from decomposed plants. When stable isotope ratios are combined with the species' ecological preferences and tolerances, the depositional environment can often be determined conclusively (e.g., Goodman et al. 2009).

The ultimate aim of geoarchaeological analysis of paleocoastal environments is to identify the changing coastal environments of deposition, or *facies*, over time. Facies are defined as the characteristics of a rock unit (in this case, a sedimentary deposit) that reflect the condition of its origins and differentiate it from adjacent units. Each sedimentary facies identified in the core has an essentially uniform character that reflects its origin and distinguishes it from adjacent units laterally and vertically (Rapp and Kraft 1994: 72). Biofacies derived from microfaunal analysis are correlated with sedimentary facies resulting from the granulometric analysis (Fig. 5.12). The chronometric framework for the sedimentary sequence is usually provided by radiocarbon determinations on organic material present in the core, including shells, charcoal, wood fragments, peat, charred roots, and other plant remains. Datable sherds can also provide chronological information. When a number of sediment cores are taken across a coastal landscape, the sedimentary units can be correlated to construct a broad record of changing coastal landforms over time.

The work of Besonen and colleagues in the lower Acheron River valley provides an example of facies designations (Besonen et al. 2003). On the basis of geoarchaeological fieldwork using the techniques described above and others (Besonen et al. 2003: 209), they identified 14 distinct sedimentary facies on the modern landscape, which correlate to paleoenvironments that existed at one time or another in the Holocene (Table 5.1). They divide the facies into two broad depositional systems: the fluvial depositional system, consisting of the sedimentary environments landward of the shoreline, and the deltaic nearshore system, comprising those seaward of the shoreline but within the marine embayment (Besonen et al. 2003: 212–16). These data, combined with an array of radiocarbon dates from core material, allowed for the reconstruction of coastline

configuration and coastal environments over time (Besonen et al. 2003: figs. 6.13–6.15). Because the terminology used to name these facies is not standard across the Mediterranean, it can take some effort to work out the correlations from one site to another.

Facies/surface name	Definition	Diagnostic sedimentology	Diagnostic biostratigraphy
Harbour Abandonment Facies (HAF)	- Degradation of harbourworks and exposure of the basin	- High to middle energy aggradational and progradational sets - Coarsening-up sequence	- Juxtaposition of diverse ecological groups (translate the exposed nature of the depositional environment)
Harbour Abandonment Surface (HAS)	- (Semi)abandonment of the basin	- Transition from fine-grained harbour silts and clays to coarse sands and gravels	
Ancient Harbour Facies (AHF)	- Anthropogenically forced low-energy sedimentary environment	- Transition from coarse beach sands to fine-grained harbour silts and clays - Rapid fine-grained sedimentation rates (10–20 mm/yr) - Granulometric heterogeneity	- Ostracods = <i>Cypridae torosa</i> , <i>Loxocorcha</i> spp., <i>Xestoleberis</i> spp. - Foraminifera = <i>Ammonia</i> spp. - Mollusc = <i>Parvicardium exiguum</i> , <i>Loripes lacteus</i> , <i>Gemma</i> vulgatum
Harbour Foundation Surface (HFS)	- Natural to artificial interface	- Abrupt change from coarse beach sands to fine-grained harbour silts and clays	
Proto-harbour sands Pre-harbour sands	- Natural beach sediments	- Aggradational coarse to medium grained sands - Coarsening-up sequence	- Coastal and semi-protected sub-tidal taxa
Maximum Flooding Surface (MFS)	- Marine flooding of the coastal sequence (ca. 6000 BP)	- Transgressive sands and pebbles	- Coastal and semi-protected sub-tidal taxa

5.12 Correlation of biofacies and sedimentary facies in the Ancient Harbour Parasequence. Reprinted from Marriner and Morhange 2007: 177, fig. 31, with permission of Elsevier.

Table 5.1. Sedimentary facies in the lower Acheron valley (Besonen et al. 2003: 213–16)

Facies	Main component(s)
(1) River channel	Coarse lag deposits and bars
(2) Subaerial - natural levees	Ridges of coarse and muddy sand formed by deposition of coarse overbank deposits
(3) Crevasse splays	Sand- to mud-sized flood deposits
(4) Floodplain	Flat ground adjacent to river channel, mainly silt- and clay-sized flood deposits
(5) Backswamp	Transitional zone between

	floodplain and shallow lake; perpetually saturated, organic-rich muds and clays; freshwater ostracods
(6) Shallow freshwater lakes and pools	Clay-sized particles; sparse freshwater ostracods and gastropods
(7) Delta-top marsh (fresh to brackish)	Organic-rich peat and peaty mud; brackish and freshwater microfauna
(8–10) Active delta front: distributary channel; distributary mouth bar; subaqueous levee	Continuity of subaerial natural levees underwater; particle size ranges from sand and sandy gravels (delta distributary channel) to sand and silt (subaqueous levee); brackish to marine microfauna
(11–12) Lower delta front; prodelta	Basinward of active delta front; low organic; coarser deposits than active delta front; brackish to marine microfauna
(13) Interdistributary bay	Shallow open body of water; silts and clays; abundant brackish to marine microfauna
(14) Concentric accretionary beach ridge and swale sets (see Fig. 5.3)	Facies (7)–(9) provide constant source of sandy sediment reworked by wave action, then piled over regular wave deposits by spring and winter storm waves and kept in place because Phanari Bay too well sheltered for longshore currents to entrain them

Classification of Bronze Age Harbors

Several typological schemes have been developed to classify ancient anchorages and harbors. Generally, archaeologists have offered typologies based on idealized coastal topography *projected to the time of use in antiquity* (e.g., Blue 1997; Chryssoulaki 2005; Raban 1991; Shaw 1990), while geologists use geomorphological formation and

history as the main criteria (e.g., Marriner and Morhange 2007).

Lucy Blue (1997: 31–34: figs. 1, 2), basing her typology on previous work by N. C. Flemming, distinguishes two categories of Bronze Age anchorages: those on high-energy, cliff-lined coasts, and those on low-energy, low-lying coasts. Anchorages on the former occur in (1) natural bays; (2) almost enclosed bays; (3) bays on either side of an anvil-shaped headland; (4) lee of a promontory; (5) sheltered valleys; and (6) lee of offshore islands or reefs (Fig. 5.13). On the latter, anchorages are found (1) on the banks of navigable rivers that empty into the sea; (2) in inland lakes upriver; (3) in natural embayments; (4) in river deltas; and (5) in lagoons or estuaries (Fig. 5.14). Blue's typology takes into consideration not only coastal configuration and landforms but also systemic energy; her distinction between high- and low-energy environments correlates fairly well with Wells' (2001: 150) first-order division of open versus protected coastlines. Other published descriptions of the range of Aegean or eastern Mediterranean anchorages are less detailed or are not typologies per se. Stella Chryssoulaki's (2005: 82–83, fig. V) typology is much simplified relative to Blue's and focused more narrowly on landforms rather than processes, but she does explicitly address certain features, such as sunken peninsulas and tombolos, which are particularly relevant to Minoan Crete. Using Blue's topographical typology, it is possible to assign a number of Aegean anchorages to one of her types (Table 5.2).



1. Natural bay



2. Almost enclosed bay



3. Bays either side of an "anvil-shaped" headland



4. In lee of a promontory

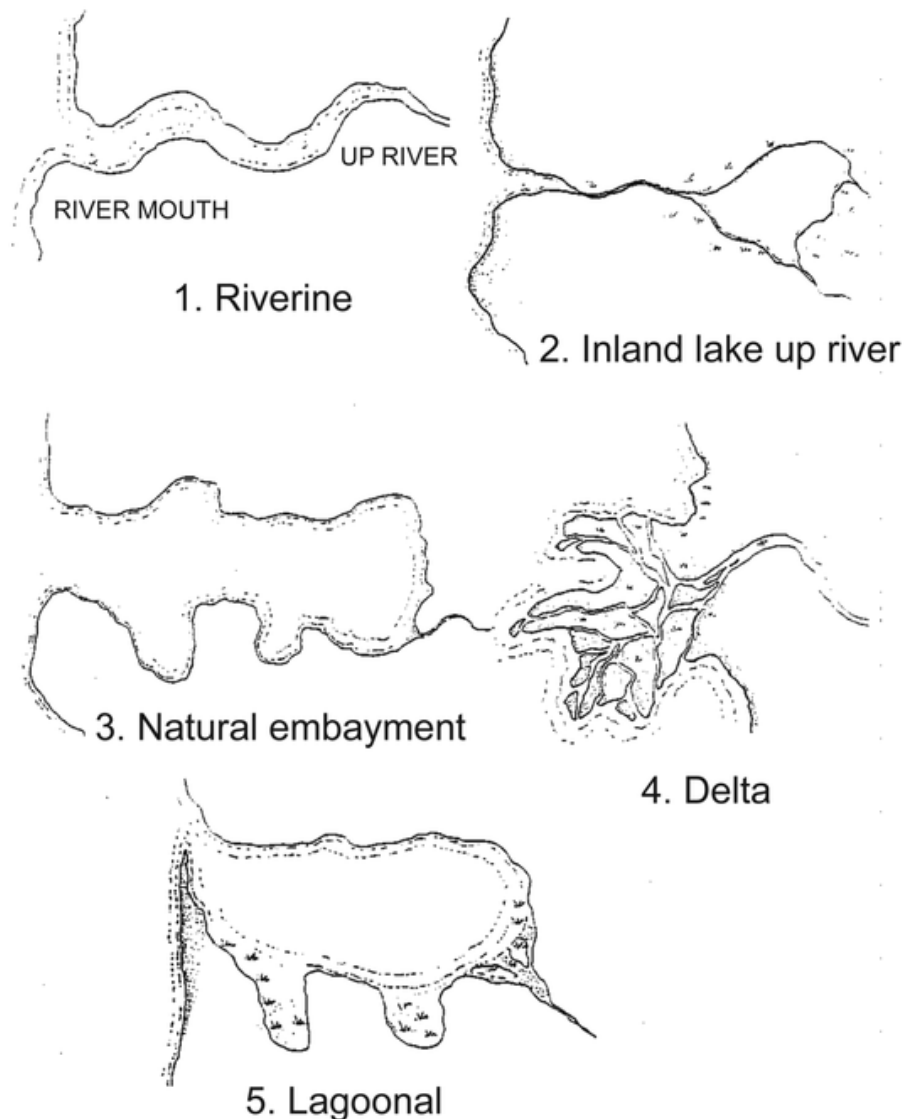


5. Sheltered valley



6. Anchorage in lee of islet/offshore reef

5.13 Topographic typology of Bronze Age anchorages: high-energy coasts. Drawing by Felice Ford after Blue 1997: 33, fig. 1.



5.14 Topographic typology of Bronze Age anchorages: low-energy coasts. Drawing by Felice Ford after Blue 1997: 34, fig. 2.

Table 5.2. Mediterranean anchorages associated with topographical types

	Topographic type	Mediterranean examples
High-energy	Natural bay	Zakros, Souda (Crete)
	Almost enclosed bay	Mezapos, Kiparissi (Laconia)

Low-energy	Bays either side of anvil-shaped headland	Pseira (Crete); Ayia Irini (Kea); Vayia (Corinthia)
	In lee of a promontory	Many, depending on wind direction
	Sheltered valley	Ayiofarango (Crete), Vathi (Matala, Crete)
	Anchorage in lee of islet or offshore reef	Amnisos, Kommos (Crete)
	Riverine	Israeli coast
	Inland lake up river	Acherousian Lake (Epirus, post-Bronze Age); Enkomi <i>Ayios Iakovos</i> (Cyprus)
	Natural embayment	Many bays and gulfs, e.g., Glykys Limin (Epirus); Latmian Gulf (western Anatolia)
	Delta	Nile Delta; Cilician Delta (southern Anatolia)
	Lagoonal	Western Peloponnesian coast (Elis, Messenia); Hala Sultan Tekke (Cyprus)

Geomorphologists Marriner and Morhange (2007: 146–62, figs. 7–9) propose a complex harbor classification based on four variables: (1) proximity to the modern coastline; (2) position relative to sea level; (3) sedimentary environments; and (4) taphonomy (how a harbor came to be fossilized in the sedimentary record). According to this typology, there are buried urban, buried land-locked, buried lagoonal, buried fluvial, submerged, uplifted, and eroded harbors (Marriner and Morhange 2007: fig. 7). These can further be organized as lying on unstable coasts (those exhibiting tectonic subsidence or uplift) or stable coasts (all others, not affected by tectonic activity; Marriner and Morhange 2007: fig. 8). Another geomorphological perspective is preservation potential: buried harbors have good preservation potential by virtue of being buried; uplifted and submerged harbors have medium preservation potential; and eroded harbors have poor

preservation potential (Marriner and Morhange 2007: fig. 9).

The advantage of geomorphological typologies is that they are ostensibly based on fieldwork that has established the diachronic history of deposition, erosion, and movement of the shoreline. This is not to say that these geomorphological reconstructions cannot be misleading or wrong, as the case of Kition-Bamboula (Morhange et al. 2000) demonstrates. As mentioned above, archaeological discussions of ancient coastlines that retroject modern topography into the distant past without careful consideration of geomorphological history, or that fail to present explicit evidence for proposed configurations, must be treated with caution. Blue's topographic typology is based on an understanding and application of geomorphological principles, but in the wrong hands the typology can make it seductively easy to simply match modern satellite images of coastal areas, which are so easily accessible online, with these idealized types. The topographic and geomorphological typologies are complementary data sets that should be used in combination.

A Systematic Approach to Detecting Bronze Age Harbors

The investigation of ancient harbors is by definition both a geoarchaeological problem of coastal landforms and processes, and one that requires more traditional means of terrestrial and underwater archaeology. In view of the rich geomorphological scholarship on the Mediterranean and the availability of interested coastal geomorphologists, there is no justifiable philosophical impediment to systematic, joint archaeological–geomorphological programs to detect ancient anchorages in a narrow sense, and more broadly to investigate Bronze Age coastal worlds. These investigations are interdisciplinary as is all good archaeology, and they involve terrestrial and maritime fieldwork proceeding hand in hand. There are abundant models for the implementation of pedestrian survey (e.g., Banning 2002; Cherry et al. 1991; Tartaron et al. 2006), terrestrial excavation (e.g., Drewett 1999; Hodder 1998), and underwater survey and excavation focused particularly on shipwrecks (e.g., Gould 2000: 21–64; Muckelroy 1978: 24–58), but the real need going forward is for the design of programs of close collaboration between archaeologists and geoarchaeologists from inception to interpretation.

Models of integrative research, relying on constant collaboration

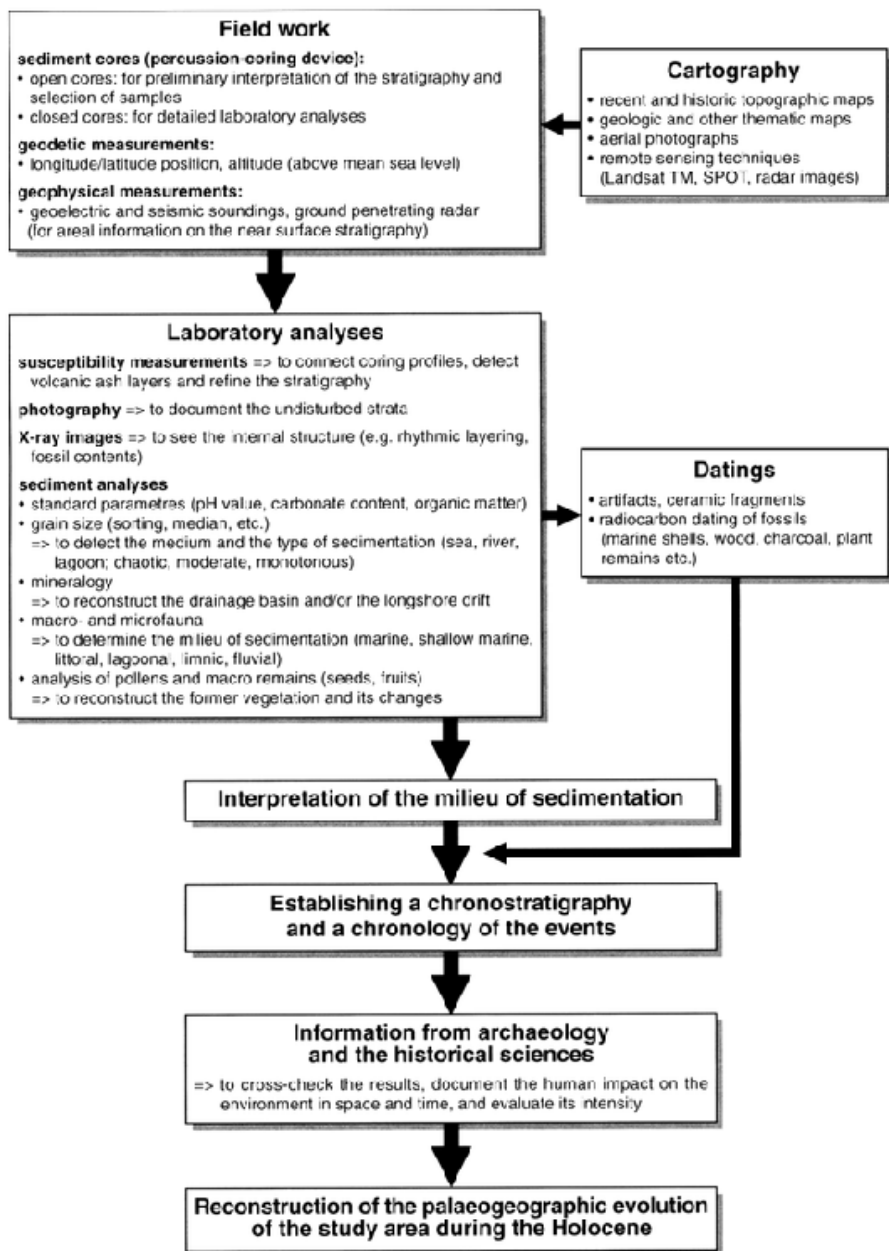
across disciplines in the field and “intensive exchange of information, ideas, and procedures from the planning stage through final publication” (van Andel 1994: 28), are at hand in the eastern Mediterranean. The renewed excavations at Çatalhöyük by Ian Hodder and colleagues practiced a “reflexive archaeology” that assembled specialists from diverse disciplines to observe the recovery of material “at the trowel’s edge” (Farid 2000; Hodder 1997, 2000). The Eastern Korinthia Archaeological Survey (EKAS) applied a comparable philosophy to pedestrian surface survey by integrating experts from all participating disciplines in each stage and in every aspect of the project (Tartaron et al. 2006: 463–64). The fieldwork application of this philosophy entailed the “embedding” of geomorphologists in archaeological survey teams, and archaeologists with teams engaged in geomorphological mapping and soil description. The atmosphere of mutual enlightenment engendered by shared research allows collaborators to gain a realistic understanding of the opportunities, limitations, and reasonable outcomes of each others’ fields. The goal as applied to coastal research is to pool the acquired knowledge in order to learn about the human and natural interface of land and sea, in the service of a broader, more holistic study of maritime cultural landscapes; in the words of Ina Berg (2010: 21), “...an inclusive archaeology of islands, sea and coasts.” But, as Berg cogently emphasizes, this is not merely a matter of cross-disciplinary communication, but instead requires a commitment to breaking down the conceptual divide between land and sea that has characterized Mediterranean maritime archaeology (see Chapter 6).

Like any archaeological investigation, a joint archaeological–geomorpho-logical program of coastal research should proceed by a sequence of coherent, logical steps (Fig. 5.15). One might begin, as the present study did, with a vexing problem (where are the Mycenaean-era anchorages?), or any set of compelling, carefully defined archaeological or anthropological questions that can be applied to a geographical and chronological horizon of interest. The precise study area can be refined based on the research questions and tempered by constraints of time, money, and permit restrictions. The research questions should be formulated in an explicit theoretical framework (as we know, all archaeological research has a theoretical orientation, whether acknowledged or not), from which a series of testable hypotheses can be generated. From these preliminary deliberations, appropriate search strategies and field methods can be developed. For coastal projects, archaeological and geomorphological fieldwork may occur both on land and in/on the sea.

Strategies for the initial discovery of Bronze Age anchorages in a survey universe (a long coastline, for example) of relatively unknown site potential can make use of a host of distinctive approaches, such as the following:

- (1) Investigation of known historical harbors; many have earlier histories as natural anchorages of the Bronze Age or Early Iron Age (e.g., Sidon, Tyre, Liman Tepe).
- (2) Examination of modern natural anchorages to test, through geoarchaeological means, whether they existed as suitable anchorages in the Bronze Age.
- (3) Focus on deltas and river mouths. Because these were favored as natural harbors in the Bronze Age, programs of geological coring may recover evidence of buried deltaic and estuarine systems of that age.
- (4) Collection of information from local inhabitants, who often know of coastal and underwater archaeological sites. In addition, oral histories and archival data giving evidence of human activities in historical and modern times can provide analogies and insights into emic perceptions of maritime cultural landscapes (see Chapter 7).
- (5) Intensive geomorphological and archaeological surface survey along the entire littoral zone of the study area to assess evidence for coastal landforms and to recover traces, however abundant or sparse, of human activity (with selective excavation, where possible, occurring at a later phase).
- (6) Systematic search based on models of coastal exploitation. The Coasts and Harbors Survey, a subproject of EKAS, developed a GIS-driven probabilistic model for prehistoric harbor locations based on environmental and cultural variables (Rothaus et al. 2003; Tartaron et al. 2003). Ground-truthing the model resulted in the discovery of two major Bronze Age anchorages at Vayia and Kalamianos on the Corinthia's Saronic coast, and subsequent geoarchaeological investigation and archaeological prospection over the years has generally validated the principles and results of the model. In a different way, geoarchaeological analysis of the coast of Elis led to predictive statements about the locations of buried Bronze Age sites and coastal landforms (Kraft et al. 2005). In both cases, a Bronze Age coastline has been partially reconstructed from a modern littoral virtually devoid of recognizable anchorages, a first step to reconstituting humanized coastal worlds.

Other discovery strategies, not generally practiced in the search for Mediterranean Bronze Age anchorages, are prominent elsewhere. In Scandinavia, the preferred methodological tools are phosphate analysis and place-name studies (Ilves 2009; Westerdahl 1992: 9–11). The method of identifying coastal settlements by detecting dark soils with high phosphate content, followed by test pitting, was established already in the early decades of the twentieth century by Olof Arrhenius (Ilves 2009: 154), but has been little attempted in the Mediterranean (the so-called stables at Gla are an exception: Iakovidis 1989, 2001). Similarly, the use of the many place names with transparent or plausible associations with maritime activity, as well as old maps and charters, to find harbors, is a significant element in Scandinavian maritime archaeology because of the primary focus on historical (Viking Age and later) periods. As we have seen, the names of relatively few Aegean Bronze Age settlements are known, and none has a transparent linguistic association with the coast or sea.



5.15 Flow chart of methods in geoarchaeology and paleogeography. Brückner 2003: 126, fig. 2. Courtesy of Springer Science + Business Media.

Liman Tepe, Aegean Turkey: A Brief Example

Recent research in the Bay of Izmir region of Aegean Turkey provides

a compelling example of integrative research and a striking demonstration of the need for comprehensive geoarchaeological investigation to properly reconstruct ancient coastlines and harbors. The coastal settlement at Liman Tepe was a significant Bronze Age center, and in later times the site of the Ionian city of Klazomenai. Liman Tepe was particularly important in the EBA, when a fortified citadel was built. Finds from the limited excavations to date within the settlement have revealed a vigorous local culture with strong ties to other areas in the Aegean Islands and the Greek mainland, as shown by imported pottery as well as an architectural complex that may have functional affinities with the “corridor houses” of the EH II Aegean (aholou 2005).

From the archaeological and historical information, it was assumed that a major harbor was located at Liman Tepe, but until the late 1990s, paleocoastal reconstructions were limited to interpretations of modern topography and the distribution of archaeological materials from surface survey. Based on information from these two sources, it was believed that in the EBA, a large part of the enclosure wall, now submerged, extended to the north and in the northwest formed a large pier with an attached built breakwater, preserved as a ruined underwater structure (aholou 2005: 98; Fig. 5.16). It was also thought that the later Archaic-period harbor occupied a large embayment delineated by the distribution of surface and near-surface architecture and artifacts (Ersoy 1993).

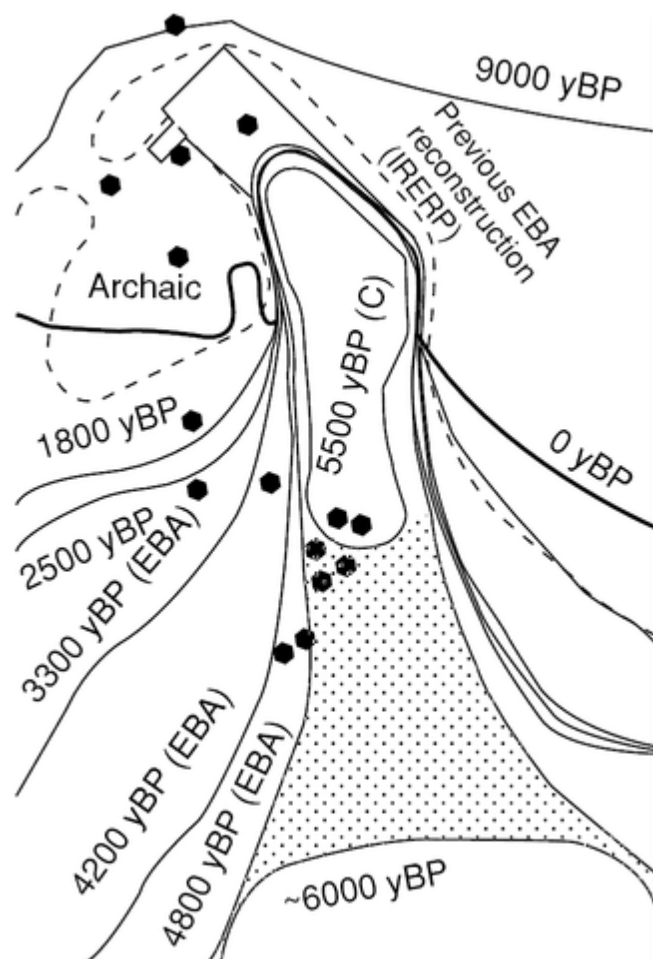
Because these reconstructions relied on tenuous data, a new archaeological and geoarchaeological program was begun in 1999 and continued in years following, featuring underwater excavations and a multiproxy geoarchaeological study (Goodman et al. 2008, 2009). The geoarchaeological data set was derived from terrestrial cores, sea-bed cores, and grab samples from the walls of the underwater excavation trenches. These materials were subjected to microfaunal analysis of shells, foraminifera, and other microfossils to determine presence/absence, ubiquity, and species and their environmental tolerances; grain size analysis; determination of $\delta^{18}\text{O}$ and $\delta^{13}\text{C}$ values relative to local sea water; presence/absence of archaeological materials; radiocarbon dating; and chronological and stratigraphic association of deposits (Goodman et al. 2008: 1270–72, 2009: 97–98). Using these proxy measures, the researchers were able to identify the following environmental facies: terrestrial, supratidal, wetland, foreshore, lagoon, upper shoreface, and *artificial* harbor basin (Goodman et al. 2008: 1272–77, 2009: 98–100).



5.16 Location of Liman Tepe in the Bay of Izmir region. Satellite image © 2011 Google Earth, © 2011 Digital Globe.

The historical interpretations engendered by these results conform in important ways to current understandings of long-term regional processes in the eastern Mediterranean, but explicitly contradict the previous reconstructions of the ancient coastline at Liman Tepe (Goodman et al. 2009: 100–102). The data are in basic agreement with an early Holocene marine transgression, followed by eustatic sea-level-rise deceleration circa 6000 BP. The deceleration resulted in a positive sediment budget, and excess sediments were transported by longshore currents to form sandbars, and ultimately beach barriers with extensive lagoons behind them. It was during the EBA that an ideal combination of nearshore lagoons and a tombolo joining the mainland to an offshore island created several natural, sheltered contexts to anchor or beach seafaring vessels. By the end of the LBA, however, these longshore sediments isolated the lagoons from the sea, as indicated by a change from brackish-marine to fresh water, ending the viability of Liman Tepe's harbors (Fig. 5.17). There is no evidence for a harbor of any kind for centuries thereafter, until artificial harbor

constructions were first built circa 800 BC. During this Early Iron Age interim of at least 200 years, archaeological evidence indicates a diminished community with few maritime connections.



5.17 Reconstruction of the Bronze Age coastline at Liman Tepe. Goodman et al. 2009: 102, fig. 3B. Courtesy of John Wiley & Sons, Inc.

It is of particular importance that the geoarchaeological study allowed the investigators to reject the previous coastal constructions (Goodman et al. 2009: 101–103). The submerged built feature was associated not with the EBA, but with the much later built harbor of the Archaic and Classical period. This finding is significant because, along with the revelation that a number of natural anchorages existed along the EBA coastline, it helps to sustain the notion that built harbor

constructions were rare or absent in the Bronze Age Aegean. Earlier reconstructions also showed a broad bay east of Liman Tepe in classical times (Ersoy 1993; Goodman et al. 2009: fig. 1), but the geomorphological data demonstrate that such a bay existed only in the EBA.

The implications of these results are clear for understanding the history of the site and its maritime connectivity over time. Once again, we see that however meticulous or well intentioned, reliance on modern surface topography or archaeological patterns often leads to flawed reconstructions. Thus, the geoarchaeological study of Liman Tepe's paleocoastline offers a strong argument for the type of interdisciplinary work advocated in this chapter. Additionally, as Beverly Goodman and colleagues (2009: 103) point out, the Liman Tepe study presents a contrast to previous studies in western Anatolia focused on sites at the mouths of large rivers, such as Ephesus or Troy. It illustrates that major coastal change occurs also in less dynamic environments, even in the absence of plentiful sediment supply from an alluvial source. This point of view is especially germane as the scale of analysis moves toward finer-grained, local coastal contexts.

Conclusion

In this chapter, I have attempted to address critically the widely held impression that the land masses of the Greek mainland and Aegean Islands have been essentially stable over the period from the Bronze Age to the present. By necessity, I have emphasized the physical and environmental characteristics of coastal settings. In the next chapter, I present theoretical perspectives that emphasize the social aspects of living in coastal and maritime settings. Thereafter, the physical and social-symbolic background will be firmly in place, and the two distinct approaches can be joined in the case studies of Chapter 7.

six Concepts for Mycenaean Coastal Worlds

The ensemble of Mediterranean lands...has an inside-out geography in which the world of the sea is “normal” (the interior), and the land is the fringe, its marginality increasing with its distance from the water. (Horden and Purcell 2000: 133)

Having presented arguments for the recovery of the physical spaces of ancient coastlines, I seek in this chapter to integrate the spatial, temporal, and social dimensions of coastal dwelling in a broader conceptual framework that emphasizes networks of interaction. Such a framework must be dynamic: it must accommodate expansion and contraction of networks, reconfiguration in the number and location of nodes in a network, and multiple and overlapping networks operating at different geographic and temporal scales and serving different purposes. These changes and adjustments can be influenced by environmental and technological factors, but to a much greater extent they are determined by political, economic, and social relationships (e.g., Horden and Purcell 2000: 53–88). On the most fundamental level, however, the conceptual framework should address whether the coastal mode of existence is sufficiently distinctive to merit theoretical consideration as an entity or category in its own right. I begin, therefore, with a discussion of how coastal people are positioned relative to the worlds of land and sea around them, and how consequently they played a special role in the connectivity of the Mycenaean world. Subsequently, I present a framework for Mycenaean maritime connectivity based on several conceptual categories related to scales of interaction. Finally, I explore how this framework can accommodate current ideas about connectivity and social networks.

The Unique Status of the Coastline?

Life in the twenty-first century can color one's view of movement about the landscape, particularly when one's point of reference is the hyper-developed "first world." The elaboration of an infrastructure of roads, railways, and airports has marginalized sea travel for most people, and this change has affected Greece as much as any other European country, despite its long association with the sea. The ability to travel safely around Greece on good roads has minimized sea travel and has located coastal areas in a conceptual periphery: coastlines are now destinations to which one drives on occasion to escape the rigors of continental life. Most sea travel consists of short jumps from mainland to island or island to island while on holiday. But in the LBA this relationship is likely to have worked in the opposite way. It is commonly observed that in antiquity it was easier to travel around the Greek mainland by sea than by traversing the rugged interior. This principle calls attention to the virtual lack of built roads in the Bronze Age (those around Mycenae being the primary exception), the limited hauling capacity of humans and pack animals over rough tracks relative to the considerable cargo capacity of ships such as those recovered at Uluburun and Gelidonya, and the fact that few locations on the mainland are far from the sea. Though true enough, this principle predictably threatens to become an overcorrection that underestimates overland traffic, which must have been continuous and perhaps even predominant in months when sailing was difficult.

An even more obvious point is that nodes in a maritime network are coastal, and for this reason alone coastal places and people are essential to any network analysis that involves connections by sea. But can we say more? Can we mark out a distinctive role for coastal people that transcends mere geography to convey something meaningful about the implications of inhabiting the coast during Mycenaean times? I think it is possible by re-centering the coastline, and to do this it is necessary to embrace the notion that webs of interaction articulate coastal dwellers to both land and sea.

The first step is to recognize the simultaneous *liminality* and *centrality* of the coastline. The coast occupies a physically liminal space at the interface of land and water. Coastal people occupy an ecotone – a transition between contrasting ecological zones and their productive resources. This liminality is both economic and social; that is, the shore is the space where people and products from the interior meet those arriving by sea. Coastal communities play a mediating role in these encounters, and the coast becomes a central – not merely liminal and certainly not peripheral – place. As implied in the quote

opening this chapter, it is inland people who have the greater challenge establishing and maintaining connectivity in a Mediterranean setting such as the Aegean. In [Chapter 7](#), oral histories from inhabitants of the modern village of Korphos will be used to illustrate the ways that coastal people may manipulate their centrality in economic transactions.

There are several implications of the centrality of coastlines. People inhabiting them need not be oriented to the sea, but it may be impossible to escape this orientation when the sea offers resources and brings other people, wanted or unwanted. Coastal dwellers are in a sense amphibious since they become adept at negotiating both land and sea, and mediate between terrestrial and maritime worlds. They possess distinctive and specialized knowledge about how to negotiate local winds, weather, and other navigational hazards. In a more figurative sense, coastal areas have been central to history and tradition as the settings for armed conflict, whether we invoke the coastal raiding of the *Odyssey* or the great battles at Troy, Marathon or Thermopylae, or Navarino. The recurrent raids and invasions suffered by coastal settlements mark them as exposed and vulnerable. Fortified coastal settlements such as those of the EBA Aegean reflect both a maritime orientation and the need to protect communities from the dangers of piratical raids.

Although I stop short of advocating subdisciplinary status for coastal archaeology, I do suggest in this book that coastal areas are sufficiently unique in their geomorphology, geographic position, and interactive potential that they merit special study. It may be useful to draw a brief comparison with “island archaeology” in the Mediterranean. Broodbank (2000) explicitly called for an island archaeology approach that focuses on Aegean-scale connectivity and interaction, while rejecting then-prevalent notions of insularity and island biogeography that treat individual islands as isolated “laboratories” for cultural evolution (inspired of course by the studies of Darwin and his successors on the effects of isolation in biological evolution on islands; see Cherry 2004: 241–45; Patten 1996: 1–5, 19–34). In a remarkable bit of irony, Paul Rainbird in his *The Archaeology of Islands* (Rainbird 2007) argues against the very concept of island archaeology. While supportive of Broodbank's general approach, he rejects the commitment to islands as units of analysis as a “fatal flaw” (2007: 43). He instead favors a theoretical shift to an archaeology of the sea that encompasses islands and the littorals of mainlands as a complement to archaeology on land, as well as a shift away from

emphasis on the material and environmental record to the postprocessual project of trying to recover the lives and perspectives of mariners and coastal dwellers. The coastal archaeology that I advocate draws something from both; specifically, Broodbank's stronger commitment to empirical evidence (both environmental and cultural), and Rainbird's interest in teasing out the individual and (especially) the maritime community. I make no a priori distinction between coastal communities situated on mainlands and those on islands, because the coastline always unites land and sea, and because the way that a coastline functions does not strictly depend on its mainland or island location. Small islands may comprise little more than coastline without a significant terrestrial hinterland, but that situation is simulated on Greek continental coastlines where a narrow coastal strip is backed by a rugged, mountainous interior. Similarly, the experience of coastal dwelling on larger islands may not be fundamentally different from that on continental coastlines. I follow both of these scholars in advocating an approach that encompasses maritime, terrestrial, and coastal, while placing particular emphasis on the distinctiveness, analytical potential, and historical significance of the coastal zone.

A Framework for Maritime Cultural Landscapes

The concept of the *maritime cultural landscape*, coined and subsequently developed by Christer Westerdahl, is widely cited and used as a framework for discussion of maritime interaction, but its application is somewhat problematic in that it remains highly generalized and ambiguous.¹ The maritime cultural landscape, according to an early translation into English, "...comprises the whole network of sailing routes, old as well as new, with ports and harbours along the coast, and its related constructions and remains of human activity, underwater as well as terrestrial" (Westerdahl 1992: 6). Although Westerdahl recognized the "immaterial, cognitive or indicative" aspects of maritime life, for him these were preserved mainly in place names (Westerdahl 1992: 6). Such a definition encompasses virtually everything with little consideration of variability or scale – it could equally describe a local or an international network, a Bronze Age or Medieval world – and gives insufficient scope to the immaterial cultural dimensions of living and moving within maritime landscapes. In later writing, Westerdahl increasingly incorporated experiential and cognitive elements, but this did not fundamentally change the broad-brush quality of his concept. The tendency of landscape studies to ambiguity about the nature of

what landscape is, or can be, and the proliferation of often conflicting definitions of landscape, have been noted as both a strength – as a capacious space for theoretical exploration and interpretation – and a weakness since a lack of clarity inevitably attenuates the force of the concept (Duncan 2006: 10–11).

Rather than bending the concept of maritime cultural landscape to my particular purposes, I propose to allow it to stand as an all-embracing foundation onto which I will construct an explicit framework for Mycenaean maritime connectivity that is based on nested scales of interaction from local to international. This multiscalar framework, summarized in Table 6.1, requires some general explication before each category is examined in turn. The hierarchy inherent in this framework is purely geographical and does not necessarily imply hierarchical relations of power. For example, a maritime small world composed of a number of coastscapes may be persistently controlled politically or economically by a powerful entity, or it may be heterarchical – that is, lacking a hierarchy of power or susceptible to changing hierarchical relationships over time. Further, leaving aside political power, interaction at any of these scales need not imply long-term stability as a social or economic network. The physical and social boundaries between these categories are fuzzy and prone to change as networks are modified by internal and external forces; they may expand or contract, solidify or fragment, be impermeable or porous. Normally, cohesion should decrease with the increasing geographical scope of an interaction sphere; a central assertion of Chapter 4 was that local networks are more stable and permanent than long-distance ones, and thus interregional and intercultural networks would be expected to be the most vulnerable to change. Yet social network theory (see below) predicts that “shortcuts” can expand networks and make longer-distance connections more efficient, and at any time two or more large, powerful sites with abundant resources may bypass local and regional networks to forge direct, long-distance connections.

Table 6.1. *A framework for Mycenaean maritime cultural landscapes*

Sphere of interaction	Geographical scale	Temporality	Operators	Typical vessels	Evidence	Typical modes of exchange
Coastscape	Territorial coastal zone: paragon to intra-ka, urban waters and the vicinal seascape	Everyday life	All specialists and non-specialists	Fishing boats; pilots; coasting vessels	Alorotiri fresco boats; Wifira, Isot, Cretan maly boat models	Home base and boundary (visibility [inland and maritime])
Maritime small world	Many coastscares, connected by no more than two day round trip; depends on topography	Unilateral	All specialists and non-specialists	Fishing boats; coasting vessels; small cargo vessels	Pisira wreck? Point Isia wreck? Alorotiri fresco boats	Home base and boundary reciprocity, central place market
Regional/ inter-cultural maritime sphere	Aegean basin; depends on technology and development of intercultural relations	Relatively infrequent	Specialists	Seagoing cargo vessels; galleys	Pisira wreck? Point Isia wreck? fresco boats; Alorotiri, Pyllos, Wifira	Boundary reciprocity, down-the-line, free-trade
Inter-regionally inter-cultural maritime sphere	Outside Aegean basin and Mycenaean maritime culture area; depends on technology and development of intercultural relations	Infrequent	Specialists	Seagoing cargo vessels; galleys	Uluburun wreck; Gelidonya wreck; LH III C painted pottery (galleys)	Down-the-line, free-trade; auxiliary trading; colonial enclave

As envisioned here, the spheres of maritime activity are nested geographically in increasingly larger webs of interaction, which together form the maritime cultural landscape of a particular cultural entity at a particular moment in time. As noted in [Table 6.1](#), however, I also inject elements of temporality and maritime specialization to express the idea that as connections grow more distant, they will normally involve fewer trips and personnel from the local area, though connections made with distant places, whether indirect or direct, active or passive, may possess tremendous social significance (Broodbank 2000; Helms 1988; Sherratt and Sherratt 1991).

It may be convenient to characterize the maritime cultural landscape by reference to the largest sphere of interaction detectable at a given moment, since it can be assumed that societies engaged in interregional networks will possess intracultural networks and small worlds as well. Not all levels of interaction need exist at a given time, however: obviously, connectivity is more far-reaching in some eras than in others, and for certain expanses of time a coastal community may lack the ships and master sailors to actively participate in long-range voyaging. Furthermore, these coastal communities always respond in some way to the ebb and flow of the wider webs of communications around them. In periods when long-distance connectivity is limited by technology or interrupted by political conditions, maritime relations may occur predominantly or solely in the realm of small worlds and intracultural regions. Even under such conditions, goods and people may travel long distances, cutting across major geographic and cultural boundaries, but doing so in smaller segments. One thinks of the Aegean in EB II, when despite the limitations of human-powered seacraft, exotic and quotidian items circulated throughout the coasts and islands, most likely by coast- and island-hopping. The maritime cultural landscapes of these coastal inhabitants were situated entirely within the Aegean archipelago. The collapse of this vigorous connectivity in EB III reduced most

interaction to a more local scale. Fluctuations in the scale of maritime connectivity, which might be read in the archaeological record, allow for diachronic reconstructions that lend flexibility and historicity to the multiscalar framework. We would expect connectivity within the Mycenaean world to vary through time, moving through the many phases from the Shaft Grave Era to the postpalatial period; and by location in the diverse environmental and cultural settings of Greece. Although my approach privileges coastscapes and small worlds, these are clearly embedded in larger webs of connectivity, and influenced by events unfolding in distant places. In epistemological terms, I regard the finer-scale networks as building blocks in the archaeological process of recovering a more accurate understanding of how entire “world systems” work.

I turn now to defining the spheres of interaction that make up the Mycenaean maritime cultural landscape (Table 6.1). Although they are inspired by the conceptual categories of Horden and Purcell (2000), Broodbank (2000), Sherratt and Sherratt (1998), and others, they do not correlate exactly to any of these. My aim has been to make these spheres flexible, yet specific to the conditions of the LBA Aegean. They may not work particularly well when applied to other places and times, but similar principles might be used to tailor these concepts to any study of maritime connectivity.

Coastscapes

Coastscape refers to the coastal zone characterized by habitation and interaction, and by practice and perception. In the coastscape I include the following components: (1) the linear or convoluted shoreline and the adjacent coastal lowland that may be inhabited and exploited by maritime communities; (2) the connective routes and openings into the interior, which are often dendritic and follow natural paths connecting coast and hinterland (e.g., streams, mountain passes). The landward limit of the coastscape is often defined by ridges or mountains that block views to the interior and impede easy passage; (3) the inshore waters that are utilized on a daily basis for economic and social purposes; and (4) the visual seascape, the everyday field of view that defines the cognitive horizon in the seaward direction, in recognition of a continuous cognitive landscape for which the land–sea interface is no boundary. Hypothetically, therefore, the limits of the coastscape extend from the coast to the connective passes inland and the visible seaward horizon, but topography has much to do with the size and scope of a coastscape.

The coastline may be short or long, and the coastal lowland ranges from narrow and relatively isolated from the interior, to broad and relatively open to the interior. The visual seascape may be a broad horizon, or it may be obscured by coastal ridges, offshore islands, or neighboring mainland. The visual seascape of one coastscape may overlap with that of others.

Coastscales are instantiated by practice. Coastal zones are distinguished by the inhabitation of coastal communities, and by their maritime and terrestrial activities. Everyday engagement with the sea involves fishing, local travel along the coast or to offshore islands, and pilotage and other interactions with ships and boats attempting to make landfall. The fishing boat and the coasting vessel, along with the pilot to assist larger ships to anchorage, would be characteristic of activity in the coastscape ([Table 6.1](#)). A coastscape may possess one or several anchorages, varying in size, depth, and exposure to winds and waves. It is a common practice in conditions of severe weather or strong winds to move boats from one anchorage to another nearby that is better protected, if one is available (Malin et al. [2007](#): 1). Small anchorages may be used only seasonally or opportunistically to collect produce to be picked up by passing ships (Rothaus et al. [2003](#): 40), or as shelters from violent weather. The quality of a coastscape's harbors and anchorages for specific purposes plays a role, though not necessarily a determinative one, in its connectivity. Maritime activities occurring in the coastscape are understood to be nonspecialized in the sense that they do not require sophisticated navigational skills or knowledge of complex environmental phenomena. Within the confines of the coastscape and the small world, the part-time seafarer would possess adequate knowledge of nearby anchorages and their hazards, and it would not be overly risky to project good weather conditions for a trip lasting from a few hours to a day or two.

Coastscales also witness a range of productive activities on land. Coastal settlements are rarely organized for maritime pursuits alone; land in coastal lowlands and accessible uplands is exploited, often heavily, for agricultural, pastoral, and wetland resources. These activities may not produce all of the goods required or desired by the community, which must as a consequence establish exchange relationships with maritime and inland partners. The movement of people and products between the coast and the interior has been documented as a pervasive mode of connectivity throughout antiquity, sometimes attaining a form of symbiosis. As at sea, routes and connections to the interior often overcome ostensibly formidable

topographies; and like the visible features that mark a maritime network, routes may be indicated by villages, temples, and other monuments. Local guides may be needed to perform duties comparable to coastal pilots. New tracks to and through the interior are carved out in response to political conditions, for example to avoid taxes and hide from oppressors during the Ottoman period in Greece (Horden and Purcell 2000: 131).

Coastsapes share many properties of Horden and Purcell's "microecologies" and "microregions," but there are crucial differences. For Horden and Purcell, microregions appear to be aggregates of microecologies that may embrace coasts, lowlands, uplands, and interiors depending on existing environmental zones and, particularly, human efforts to integrate them.² Their examples of the Biqa valley of the Lebanon and the central Cyrenaica demonstrate as much (Horden and Purcell 2000: 54–59; 65–74). The Biqa also shows that their microregions can be completely inland, with little or no regular contact with the sea. The coastscape, by contrast and by definition, centers on the shoreline and assumes a maritime orientation. The high mountainous areas and the interior zones beyond, forming an integral part of some of Horden and Purcell's microregions, lie beyond the realm of the coastscape. In marking this difference, I do not deny the existence or the significance of these broader interactive zones, and as mentioned above the interactions between interior and coast may be essential to sustaining maritime coastal life. Rather, the framework offered here is meant as an analytical and interpretive tool to address the particular problem of defining the nodes and networks of *maritime* connectivity. Coastsapes serve as these nodes, and through descriptions of them and of their variability across space and time, they become more than dots on a map or points on a graph of connectivity.

Maritime Small Worlds

The use of the term *small world* to describe a kind of social network is now widespread in sociology, anthropology, ancient history, and archaeology (e.g., Broodbank 2000: 175–210; Pullen and Tartaron 2007; Sherratt and Sherratt 1998; Watts 1999; Watts and Strogatz 1998), but as a concept it is defined and applied in various, sometimes incompatible, ways. Explicit definition is therefore essential, and my formulation of the small world follows from the logic of the maritime cultural landscape framework as the most local-level aggregation of nodes, that is, coastsapes. *Maritime small worlds* are interaction

spheres that form as aggregates of many neighboring coastscapes; they might also be called *local worlds*. Their cohesion results from, and they are in fact constituted by, habitual face-to-face interaction based on proximity and various kinds of social and economic ties. The communities that make up a small world commonly share cultural traditions, language, social networks such as kinship ties and intermarriage, mutual protection arrangements, and dense economic relations. Often they are united by economic interdependence if resources are unevenly distributed or if subsistence is precarious.

As noted above, the political and economic organization of small worlds may be characterized by the presence or absence of hierarchy; often the horizontal ties of coastscape communities are more prominent than ranking or vertical hierarchies. In [Chapter 7](#) we shall see how a Bronze Age small world in the Saronic Gulf oscillated between cohesion and fragmentation, and it will also be possible to consider economic hegemony as distinct from political control.

Intervisibility can be an important component of the cohesion of small worlds. Lines of sight are perhaps the most powerful integrative factor in the phenomenological world of a coastal dweller or mariner (Horden and Purcell [2000](#): 124–26). Chains of mutual visibility among coastscapes give an experiential impetus to the coalescence of small worlds, but universal intervisibility rarely extends to an entire Aegean small world, owing to the mountainous and complex topography. Some landscapes lend themselves well to the formation of small worlds by their geography and topography, such as semi-enclosed gulfs like the Argolic and Saronic, or long facing coastlines separated by narrow straits, for example the eastern Greek mainland and the western coast of Euboea. Even under the ideal conditions of the Saronic Gulf, whereas Aigina is plainly visible from most coastal locations, parts of the gulf are always invisible from any coastal vantage point. In this case, visibility combines with the peculiar conditions of maritime travel within the confines of the gulf – in contrast to those encountered once outside – to demarcate, at least hypothetically, the outlines of a maritime small world.

Distance and travel time are also crucial variables in the definition of small worlds. Actual linear distance is relevant only in its general relationship to travel time; alone it is an insufficient measure of the effort required to maintain contact between two nodes. A more useful measure of distance is a travel time index that provides a travel path textured by the resistance of sea or land to progress, taking into

account, at minimum, the effects of winds and currents. Maritime travel must take into account the common voyage that requires one day out, but four or five days return because of winds and currents. Carl Knappett and colleagues (Knappett et al. 2008: 1021) stress that actual travel times should replace physical distance as quantitative input in network models, but they were not able to quantify this variable in their first attempt (see below). David Conlin (1999: 179–84) presented a mathematical model to simulate the effects of wind and currents on travel time, and Justin Leidwanger (2011) has made a start at texturing the surface of the sea with wind and current data using Geographic Information Systems (GIS) software. Soon these various trajectories will surely converge so that we can systematically address observations such as that of Agouridis (1997: 19), who points out that environmental conditions can make islands in close geographic proximity “distant” in terms of potential for interaction.

Although travel time parameters are to an extent contingent on specific journeys, habitual face-to-face interaction places broad limits on scale. The geographic extent of a small world depends on the environmental configuration of the seascape (exposure to currents, waves, and weather patterns), seafaring technology, and strength of the relationships among members. These factors tend to be mutually reinforcing at the local level: the greater predictability of weather conditions for short-range journeys promotes access by sea, virtually year-round in many cases. Frequent contact facilitates the establishment of strong economic and social ties, potentially including kinship and social storage relations. As these relations develop, interaction becomes more frequent. Thus begins a history that, because of the density and strength of personal ties, may endure through the boom and bust cycles of larger-scale political and economic entities. Durable is not the same as immutable, however. Small worlds are not immune to the effects of environmental shifts or catastrophes, internal conflict and power shifts, or external developments.

The maximum daily range of a Bronze Age sailing ship of between 100 and 150 kilometers (Broodbank 2000: 345, table 12; Knappett et al. 2008: 1014, opt for the lower figure of 100, which I follow here) should set the outer limits of what we might call “local,” and thus the greatest expanse of a LBA maritime small world from end to end. Beyond this, we move into the realm of open-sea or night voyaging, with their requirements of advanced skills and knowledge and the higher probability of unfamiliar seas and coasts, as well as unforeseen

weather emergencies. In practice, even if we imagine short hops on long itineraries, the norm for a small world should be smaller in scale. The fishing boat, the rowboat, and the coasting vessel would be more the rule than the large sailing ship, which might operate from a major harbor (Table 6.1). By contrast, smaller boats would require only informal anchorages offering a sandy strand, or even something like the innumerable tiny docks bearing the name *skala* (from the Italian *scala*) for the few rock-cut steps used to board a vessel (Constantakopoulou 2007: 222–23). Maritime travel within the small world would thus remain primarily in the realm of the nonspecialist.

Specific to the small world are three specialized applications of social and economic connectivity that are worthy of mention as distinctive of the Mediterranean: the phenomena of the “goat island”; the *porthmeutike*, or short-distance ferrying of goods, people, and animals; and the *peraia*, here defined as a coastal region controlled by an island lying opposite (Constantakopoulou 2007: 200–26).³ Goat islands refer somewhat more generally than the name suggests to small, offshore islands and islets (inhabited or uninhabited) that are used to expand agricultural and pastoral production. These have been a prominent feature of Aegean seascapes since antiquity: Christy Constantakopoulou (2007: 200–14) documents many Aegean examples from ancient literary and epigraphic sources, beginning with Thrinacia, where Helios’ cattle and sheep were pastured in the *Odyssey* (12.127–30), and mentions several modern instances. Others have substantiated this practice with archaeological and ethnographic evidence, as for example, in the work of Nick Kardulias, Timothy Gregory, and colleagues in the area of the Saronic Gulf. Their teams performed architectural and surface artifact surveys on a number of offshore islands and islets, and if those were occupied, they interviewed residents. On the small, waterless island of Evraionisos in the western Saronic Gulf (dimensions 1000 × 400 meters), they found evidence of many periods of use, most prominently LBA and Late Roman (Kardulias et al. 1995). The discovery of LH IIIB and IIIC artifacts, along with the foundations of fortification walls possibly of Mycenaean date, is consistent with widespread evidence of use of near-shore islands in the LBA (Hope Simpson 1981). The presence of cisterns, fortifications, and other durable structures suggested to the researchers the exploitation of marginal niches during times of economic and demographic expansion (Kardulias et al. 1995: 17). The island, lacking water and arable land, could be used as a lookout and for grazing sheep and goats, but it could not long sustain occupation without a lifeline to the mainland. The success of productive activity on what amount to tiny rocks protruding from the sea depended on

certain conditions of connectivity; specifically, the economic expansion of the Mycenaean palatial period made the exploitation of Evraionisos viable by enhancing connectivity and incorporating new nodes into an ever denser web – in this case at the level of the small world.

Ethnographic and ethnoarchaeological work directed by Kardulias on the island of Dokos off the coast of the southern Argolid examined the adaptations of modern herders (Kardulias 2000). These observations help to fill in the many gaps in our knowledge of the use of such islands in antiquity with plausible adaptation scenarios. Dokos, also waterless, is more strategically located than Evraionisos on a sealane between Cape Malea and Athens. Yet in a variety of ways, the inhabitants are equally dependent upon external connections for survival. In order to make optimal use of their scarce resources, they have adopted a mixed subsistence and settlement strategy. Kardulias learned that the 22 families living on Dokos in 1945 herded sheep and goats, grew wheat and olives, maintained domestic gardens, foraged for wild plants, and collected water in cisterns for human and animal use. Yet in spite of their risk-buffering behaviors and attempts at self-sufficiency, this economy could only function if articulated to the markets and resources of the larger island of Hydra and the mainland around Hermione. On Hydra they sold animals, cheese, and milk. In addition, many of the men worked away from Dokos for much of the year. Some were sponge divers in far-flung Aegean locations, others did wage work on Hydra, and still others rented pasture on the mainland for about half the year because grazing on Dokos was inadequate. The rent for these grazing rights was usually paid in kind with milk, cheese, and wool. Thus, even a “goat island” witnessed multifaceted economies (reminiscent of the “traditional” Mediterranean economy: Butzer 1996; Halstead 1987) closely linked to larger economic nodes and structures (Kardulias 2000: 38–39). Evraionisos and Dokos provide an intriguing glimpse at how the small parts of a maritime small world might have fit into the local-scale Bronze Age economy.

The practice of ferrying people across short expanses of sea (*porthmeutike*) is well attested in Greek literature and inscriptions; the routes between Attica and the Saronic islands and between the Greek mainland and Euboea seem to have been especially heavily traveled in classical times (Constantakopoulou 2007: 222–26). This sort of short-distance traffic must have been a ubiquitous feature and a fundamental mechanism of connectivity in a small world: a lifeline for

inhabitants of offshore islands, and the means to maintain social ties among coastal communities. Interestingly, Kardulias' informant on Dokos used one of his own boats to transport tourists to and from the various coastal towns and islands in the vicinity (Kardulias 2000: 42).

The island–peraia relationship that Constantakopoulou describes from literary and epigraphic sources for the Classical and Hellenistic Aegean involves a powerful island state possessing coastal lands on the mainland opposite; often these territories were quite large, but susceptible to expansion or contraction with shifting political fortunes. Such relationships could have existed in the Bronze Age, but it is important to note that Constantakopoulou's peraiiai are explicitly *political* possessions, even if a primary motivation for holding one must often have been economic (e.g., control of mines or agricultural land). Certainly there were powerful island centers in the Bronze Age Aegean,⁴ but control of any kind extending to the mainland, economic let alone political, is something to be demonstrated and not assumed. This question will be addressed in Chapter 7 with regard to Aigina's relationship with Saronic coastal settlements.

How and why, then, do small worlds cohere? My definition is intended to address that question. Connectivity and interaction explain *how*, but the question *why* is more complex and less amenable to resolution by archaeological means. Small worlds are not determined solely by environment or geography, although proximity is tautologically essential to their configuration. Despite the fundamental influence of environmental factors, small worlds are “culturally defined unities” (Broodbank 2000: 175) that result from conscious decisions to forge connections with nearby communities. In constructing his network analysis of EBA Cycladic interaction spheres, Broodbank (2000: 176–77) considered population growth, maritime travel ranges, and climatic variability with respect to resources as potential engines for the formation of local-scale interaction spheres, before deciding to emphasize the first of these. In Broodbank's model, population increase (simulating the rise in population from the Neolithic to the peak of complexity in EB II) altered the number, size, density, and location of small-world clusters in the Aegean; a similar outcome might be expected for an analysis tracking population rise on mainland Greece from the EH III–MH II demographic crash through the Mycenaean palatial period.

Renfrew (1993: 10–11) enumerated eleven social and economic motivations for travel to engage in various types of material- and

nonmaterial-oriented interactions: to trade one's goods, to obtain others' goods, to participate in social gatherings, to seek knowledge or wisdom that will impart prestige, to visit a distant holy place as a pilgrim, to train or learn a skill, to find work or a better living situation, to serve as a mercenary, to find a spouse, to visit relatives or friends, and to serve as a sanctioned emissary. From this list we might extrapolate some more specific strategies that center on social ties that helped to bind communities into small worlds. The dispersal of kin or descent groups may originate in periods of low population density and limited mobility, when communities must look outward for intermarriage as a way to widen the gene pool and ensure reproductive viability, and for economic accommodations to counteract resource variability or unforeseen shortfalls. Along with these relationships come various social obligations that might include periodic gatherings for feasts or other kinds of rituals promoting solidarity and group identity. The maintenance of kinship ties by means of inter-island voyaging has been the topic of detailed ethnographic studies, particularly in Oceania (e.g., Hage and Harary 1996; Hage and Marck 2002). We might also imagine economic interests born not of necessity but of desire: both within and beyond small worlds, we observe in the archaeological record a widespread preference for Melian obsidian over locally available chert for stone tool manufacture, or for Aiginetan cooking and storage pottery over locally manufactured functional equivalents.

We should also consider certain proximity effects. The phenomenology of lines of sight among island and mainland coasts created an everyday visual world that invited interaction and inhibited isolation. The rough geographic limits that I have suggested for small worlds distinguish them from larger spheres of interaction because they represent a range of routine travel without the need for specialized nautical and navigational technology (given the technology of the time). To emphasize the point that small worlds should be more stable over time than larger spheres of interaction, we can observe in the historical record that favorable economic and political conditions for cross-cultural, long-distance trade wax and wane: complex networks collapse, as the great eastern Mediterranean state system did circa 1200 BC; the seas may be infested with pirates, etc. Under any conditions, small worlds may lack the capacity to participate in larger interaction spheres. Thus, small worlds would be characterized by certain kinds of economic transactions involving face-to-face trading between producers and consumers, or small-scale redistribution from key coastal nodes. In Renfrew's framework, home-base reciprocity, boundary reciprocity, central-place redistribution,

central-place market exchange, and localized down-the-line trade could all exist in a small world (see Fig. 2.5). Yet any small world could contain a major harbor – even a colonial enclave or port of trade – that articulated the local area to regional or interregional networks, bringing in other forms of interaction, including cabotage or directed emissary trade. In such cases, the different spheres of interaction blend, and it may not be possible to separate them, either conceptually or in the archaeological record. For example, the Pseira (Hadjidaki and Betancourt 2005–2006, 2006) and Point Iria (Phelps et al. 1999) shipwrecks are compatible with small-world connectivity. But we cannot be sure whether the Point Iria ship was Cypriot, having traveled a very long distance to Crete and then to the Argolid; a Cretan ship moving Cypriot goods with their own; or a local boat plying the Argolic Gulf with nonlocal transport vessels that had been recycled numerous times – and still other scenarios are possible. We can speak more confidently about short-haul trade regarding the Pseira ship. The spread of material at the wreck site, along with the utilitarian function and local provenience of the MM IIB transport amphoras and hole-mouthed jars in fabrics of the Mirabello region (Hadjidaki and Betancourt 2005–2006: 84–85; P. P. Betancourt, personal communication, 2011), indicate a small ship operating in a small maritime world centered on the Gulf of Mirabello.

There are several models of local- or small-scale maritime networks in the ancient Aegean, but their logic and geographic scale do not necessarily match those presented here. As is the case for coastscapes, Horden and Purcell's microregions and “definite places” may be entirely terrestrial, and when they include coasts, they may also encompass several interior zones. The “mini island networks” of Constantakopoulou (2007: 176–227) are more in line with the scale and maritime focus of my small worlds; however, they are explicitly political clusters of islands and it is not clear how she would map economic networks for the Classical and Hellenistic Aegean. Sherratt and Sherratt (1998) include the term *small world* in the title of an oft-cited article, but the text has little to do with local-scale connectivity, and in fact the term itself is not repeated in the body of the article. If anything, the networks they describe are long-distance and cross-cultural. Similarly, Irad Malkin envisions Greek colonization of the eighth to sixth centuries “...turning the vast Mediterranean and the Black Sea into a ‘small world’” (Malkin 2011: 5).⁵ This radically more expansive definition follows closely the “small world networks” as imagined by social network analysts (Watts and Strogatz 1998). In social network theory, small-world networks emerge when the addition of a few key links joins smaller, neighboring clusters, creating

paths and shortcuts to more distant clusters. The *network* proximity of these models need not equate to *physical* proximity (Leidwanger 2011: 89). To be sure, shortcuts and direct long-distance connections link small worlds (or coastscapes within small worlds) to regional and interregional networks, even by bypassing the members of the local small world altogether. When they do so, however, they are not operating in small-world spheres of interaction (as I understand them), either geographically or conceptually.

My small worlds find closer parallels with the “clusters” of social network analysis (Scott 1991: 129–33). Clusters are aggregates of points (or nodes) that form high-density areas in a network graph, and that separate from other clusters. Since not all points within such a cluster need be adjacent (e.g., the cluster can be elongated with many points intervening between end members; Scott 1991: 131, fig. 7.2:ii), this pattern of network proximity could be comparable to the geographic configuration of an elongated maritime small world with many coastscapes arrayed along its length. An entity that exists below the level of the cluster is the “neighborhood,” which encompasses all the points to which a given point is *adjacent*, or connected directly by a single line or step. Thus, conceptually at least, clusters could correlate with my definition of small worlds and neighborhoods with fragments thereof consisting of neighboring coastscapes, but caution is warranted regarding the concept of distance. The distance between two points in a network analysis is defined as the length of the shortest path connecting them, where the length of a path equals the number of lines and intervening points it takes to get from one point to the other. This may or may not approximate a realistic travel itinerary, but in any case it does not represent geographic distance and it does not address social or environmental friction to interaction.

Broodbank's small worlds seem to provide the closest fit. He repeatedly refers to small worlds as “local worlds” or “local interaction networks” (Broodbank 2000: 175–76), and by locating a number of small worlds *within* the Cyclades, adopts a geographical scale that is commensurate in magnitude with those I advocate, for example within the Saronic or Argolic Gulf. Many of his criteria for linking nodes into networks, mentioned above, are adopted in the chapter to follow when practicable. The most important criterion for his network analysis, population change, will be difficult to quantify for many periods in the absence of good cemetery data. Along similar lines, James Wright (2010) has proposed that social groups in the Bronze Age Aegean formed at scales he calls *local*, *locality*, and

regional. For Wright, the local consists of a community and its territory, and the locality embraces several interlinked communities “among which interaction is so common as to regard them as extensions of each community” (Wright 2010: 806). In principle, local and locality correlate closely with my notions of coastscape and small world, respectively, although many of Wright's examples are drawn from internal valleys with primarily or exclusively overland interactions. In a more maritime context, Wright (2010: 808) wonders whether the island of Aigina was a single locality or rather consisted of multiple localities in the MBA. This is a question that searches beyond the coastscape to explore the internal relations of an island, analogous with examining the connections of coastal settlements with interior hinterlands. Although this is not the primary focus of the present study, fleshing out these relationships will indeed be a crucial part of the analysis of coastscapes and small worlds.

Lastly, there is the question of whether the earliest Greek literature – Homer or Hesiod – might illuminate the maritime small world. For instance, do the contingents of towns mustering ships in the Catalogue of Ships in *Iliad* Book 2 make up something like small worlds? Many contingents are composed primarily of men from inland locations, but if we consider the maritime regions of the northeastern Peloponnese, the organization of the realms is curious from the point of view of both network logic and archaeological evidence. Agamemnon's fleet draws men from a vast hinterland stretching north, encompassing the northern Corinthia, and west to the truly distant Achaian towns of Helike and Aigion. Such a realm makes little economic or political sense, given the difficulty of connectivity and the sheer distances over this rugged terrain. Moreover, there is little archaeological evidence to support a direct presence from Mycenae in the northern Corinthia and Achaia, but instead a great interest in the Argolic and Saronic Gulf regions (Pullen and Tartaron 2007; Tartaron 2010), which in the *Iliad* are controlled by other men. The Saronic Gulf itself is carved into three separate contingents: one from Athens, one from Salamis, and Diomedes' contingent of nine towns on the Saronic and Argolic Gulfs. A political division along these lines could conceivably exist, though nothing like it is known from the Bronze or Early Iron Age. It certainly does not map well onto the logic of the maritime small world in social or economic terms.

Hesiod's adventures in sea trade and his crossing from the Greek mainland to Euboea (*Works and Days* 619–94) are more credible, reflecting the kinds of interactions one would expect within a small

world. The part-time maritime pursuits of the farmer in early Greece, operating as a local-scale merchant of his produce, exemplify the nonspecialist nature of much seafaring in a small-world context. Hesiod's crossing to Euboea to perform at funeral games was likely made on one of many ferries engaged in the kind of *porthmeutike* routes mentioned above. Despite the omnipresence of the gods in the *Works and Days*, Hesiod paints a realistic and unflinching portrait of agricultural life and the pragmatics of local politics, one which inspires more confidence in its utility for illuminating small-world activities.

Regional/Intracultural Maritime Interaction Sphere

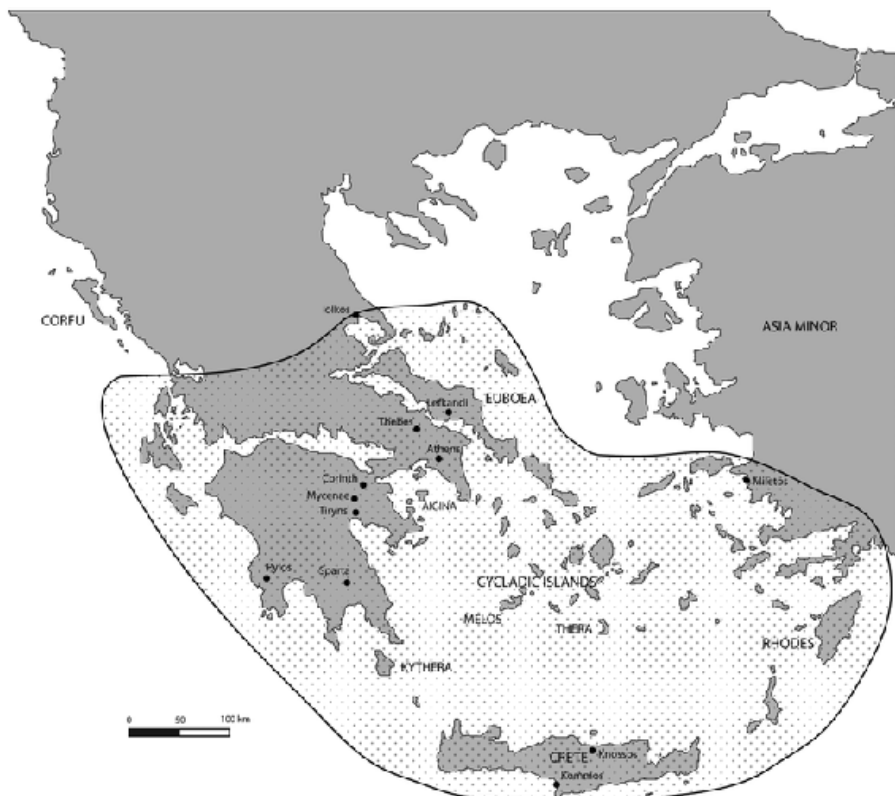
New problems are encountered when trying to discern the transition from the local context to something larger, a medium scale that we might call *regional*, and then again from the regional to the interregional or international. It has always been tricky to define the medium-scale region, since one could use many criteria: geographical or environmental regions delimited by transitions from one climatic regime to another, or from one gulf, basin, or other oceanographic feature to another; economic regions based on the extent and intensity of trade relations; social regions based on the distribution of language or cultural traits such as architecture or religious practices; political regions based on territory controlled by a state; or some combination of these. For prehistoric periods, the absence of texts (or near absence, in the Mycenaean case) forces reliance on reading from the surviving archaeological remains the unifying factors that make up a region.

A crucial distinction must be made at this juncture. By *region*, I am referring to *maritime* regions and the scale at which connectivity at sea – measured by technology, travel times, social relations, and other environmental and human factors – permits extralocal interaction spheres to cohere at any given moment. This is very different from terrestrial regions, where a different set of topographic and cultural constraints causes territories to coalesce or fragment into what we call “regions.” We should not expect them to map onto one another very closely. For the Mycenaean world, I prefer to define medium-scale *regional* maritime interaction as (1) occurring in a geographical space beyond the small world, and thus outside the realm of habitual, face-to-face interaction; but (2) still characterized by participation in a recognizably Mycenaean material culture and, to the extent that we can know, common customs and beliefs; and (3) occurring less

frequently than interactions in the small world, but considerably more often than those involving long-distance, cross-cultural relations. This definition necessitates speaking of a Mycenaean “culture area.” Such an area was neither static nor delimited by hard boundaries; nor was it continuous in space. Attempts have been made to draw lines around a map of the Mycenaean world, sometimes distinguishing between a “core area” and a “periphery” (and more recently, “semi-periphery” and “margin”; Feuer 1983, 1999; Kardulias 1996, 1999; Kilian 1990; Parkinson and Galaty 2009a; Sherratt and Sherratt 1998). Questions arise about the outer limits of a Mycenaean culture area: Was a maritime voyage from Mycenae to Knossos on Crete in LH/LM III an intracultural or cross-cultural journey? The answer depends on how pervasive one believes the Mycenaean presence was on Crete at the time, and on that point there is vigorous disagreement (Burke 2005; various articles in Driessen and Farnoux 1997; Preston 1999, 2004). In a similar vein, would the Mycenaean (or is it Mycenaeanized?) settlement at coastal Dimini in Thessaly (Adrimi-Sismani 2007; Pantou 2010) be considered part of the Mycenaean cultural sphere? Probably so, but what about sites like Assiros or Toumba Thessalonikis in Macedonia (Andreou and Kotsakis 1999; Buxeda i Garrigós et al. 2003; Wardle 1980), where contact with the Mycenaean world is apparent in pottery styles and decorations, which exist however in thriving local, non-Mycenaean, settlements? Probably not, but what factors determine inclusion or exclusion?

For the purposes of the present analysis, and from the perspective of a sea traveler, I suggest that intracultural interaction should include those places where a ship's captain could expect to find a substantial population of people speaking Greek and observing recognizable customs, such as ritual, funerary, and domestic practices. Other conformities with material culture, such as town planning and architectural design or pottery forms and decorations, were more variable and might not have been so central to Mycenaean identity. Roughly, this “Mycenaean maritime culture region” would encompass the Aegean Islands and the Aegean coasts of the Greek mainland as far north as the Bay of Volos; Crete from LM IIIA if not earlier; and the coasts and islands of the Ionian Sea as far north as the Ambracian Gulf, but would exclude much of the Aegean coast of Asia Minor north of Cape Mykale (Fig. 6.1). A regional, intracultural sphere of maritime interaction defined in this way is of course open to numerous objections. There are many areas within it, both coastal and inland, that by any definition were only tenuously Mycenaean; conversely, there are a few plausible Mycenaean coastal colonies and points of frequent contact beyond these areas, such as at Glykys Limin on the

southern coast of Epirus (Tartaron 2004: 145–77), and in southern Italy and Sicily (but see Blake 2008 for a strong challenge to the notion of Mycenaean colonies there). Nonetheless, keeping in mind the fuzzy, shifting, and discontinuous nature of the Mycenaean cultural sphere over the course of the LBA (Tartaron 2005, 2010), it should be possible to carve out hypothetical regional interaction spheres within the confines of this map.



6.1 Map of a hypothetical Mycenaean maritime culture region.

The entire area in question is not large, and a sailing vessel should have been able to traverse most of it within several days or less. But once a ship and its crew broke free of the confines of the small world, the nature of seafaring changed, with different actors and different agendas. We can now assume the presence of specialist seafarers, members of the kind of maritime community described in Chapter 4, who possessed specialized knowledge of navigation and of the natural and social conditions existing at distant places. Their ships would now have to be open-seaworthy, and perhaps more purpose designed to optimize for hauling cargo or transporting personnel over longer distances. Because of the topography of the Aegean archipelago,

extended trips could be made by coast- and island-hopping, minimizing the need for frequent open-sea or night sailing.

At regional scales, different modes of trade become prominent, including down-the-line and freelance (cabotage) trade as sailors move beyond the realm of habitual contacts to a world inhabited by comprehensible, yet increasingly unfamiliar, people and places. This aspect of the regional is similarly evoked by Wright (2010: 806): "... contact and travel among these localities is regarded as a departure from the safe and familiar."

Regional spheres of interaction are best measured by material culture studies that define the distribution of chronologically and culturally sensitive artifacts, features, and practices. Traditional methods of stylistic and formal analysis of pottery, stone tools, weapons, jewelry, seals and sealings, wall paintings, and other objects can be combined with archaeometric analyses to trace the movements of goods and illuminate the social dimensions of production, distribution, and consumption. This kind of synergy is illustrated, for instance, by the way that Penelope Mountjoy's stylistic study of regional variation in Mycenaean painted pottery (Mountjoy 1999) is informed by the results of chemical and petrographic analyses undertaken over several decades, most recently by the Bonn group (Hein et al. 2002; Mommsen et al. 2002).

The archaeological record points to a material culture *koiné* gradually enveloping most of the Mycenaean core area in the palatial period. This trend culminates in the mature stages of LH IIIA, continues into LH IIIB, but diminishes in the second half of the thirteenth century in LH IIIB2. Goods and information flowed relatively freely within the Mycenaean world. Imports were common, but style and technology were also transmitted, as attested by local imitations of widely disseminated artifact types. Petrographic analysis has demonstrated that pottery shapes and decorative styles were often imitated, using not only local materials, but also fabric recipes and manufacturing techniques specific to local potting communities. For example, during MH the spread of fine gray burnished ware across central Greece, the Corinthian Gulf, and the western Peloponnese, or the distribution of lustrous decorated ware that links Kythera, Laconia, and the Argolid, can be said to mark out intracultural regions of economic interaction (Wright 2010: 809–10).

Only a few mentions of intra-Aegean trade exist in the Linear B

tablets: most notably, Mycenae Tablet X508 records the transfer of a type of cloth to Thebes (Bennet 2008: 201–202), and exchanges between Thebes and the apparently subordinate towns of Karystos and Amarynthos on the island of Euboea involve the movement of wool to Euboea and pigs, goats, sheep, and cattle to Thebes (Chadwick 1994: 99; McInerney 2010: 64; Palaima 2004: 106). These latter interactions parallel Hesiod's short journeys from Boeotia to Euboea, and seemingly reflect the geographical extent of the Theban state and possibly a microregion of the scope described by Horden and Purcell. Various explanations have been advanced for the scarcity of references to intra-Aegean exchange, which patently contradicts the archaeological record. In view of the thousands of extant tablets that document other aspects of the economy in considerable detail, we can rule out accidents of preservation; and given the archaeological evidence it is difficult to argue that the interactions were simply infrequent. The most plausible explanations center on the palaces' administrative practices: if these exchanges were seasonal or irregular, they may have occurred outside the limited time frame of the administrative cycle preserved by the destructions, or they may have belonged to a different, perhaps higher, administrative level not recorded on clay tablets (Bennet 2008: 202). It is also possible to suggest that most such connections had been interrupted by social disturbances in the months and years leading up to the collapse of the palaces. Nevertheless, the homogeneity of the Linear B script, the language it represents, and the administrative system it served at the palaces indicate a significant level of intracultural interaction, at least at the elite level, which complements the archaeological evidence for the interconnectedness of the Mycenaean polities.

Interregional/Intercultural Maritime Interaction Sphere

Continuing the logic of the expanding geographical and cultural scope, the interregional/intercultural maritime interaction sphere involves interactions and networks that extend beyond the Mycenaean maritime culture area. As outlined in [Chapter 2](#), Mycenaean extra-Aegean connections are often deduced by plotting the distribution of Mycenaean objects found beyond the Aegean and the non-Aegean objects found in Mycenaean contexts (Burns 2010: 36–40; Cline 1994; Lambrou-Phillipson 1990; van Wijngaarden 2002). The historical sketch and the discussion of the problems of interpreting the very partial evidence presented there need not be repeated, but a few key points might be emphasized (see [Table 6.1](#)).

We do not know how often, how far, or from where, Mycenaean ships might have ventured beyond familiar waters. Sporadic visits of Mycenaeans to far-flung lands beyond the Aegean seem assured for Cyprus and the northern Levantine coast in the East, as well as the shores of southern Italy and Sicily in the West. The catalogue of imported objects, which we might have expected to travel home with Mycenaean merchants, is neither impressive quantitatively nor widely distributed geographically, however. A dominant role for ships operated by intermediaries based at Cypriot or Syro-Canaanite entrepôts (represented by the Uluburun and Gelidonya wrecks) in maintaining long-distance networks cannot be discounted. It is likely that a series of intermediate nodes was interposed between the East and the Mycenaean heartland, with down-the-line and freelance trading the rule and direct voyages or diplomatic missions the exception. Around the rim of the Aegean, Crete, with its long history of engagement with the East, and Miletos or Rhodes, enjoying proximity and close contact with the Hittites, were well positioned as ports of call and transshipment points. Whether ships were controlled by palaces or independent merchants, there was ample opportunity to mix private enterprise with official business. Long-distance voyaging was the realm of seagoing ships manned by master navigators and seasoned sailors with knowledge of open-sea sailing and experience with sea lanes and hazards en route to distant places. Traversing intercultural space, these ships entered ultimately into the realms of intracultural regions and small worlds, instantiating the intersection and overlap of the nested scales of interaction described in this chapter. Once inside a small world, the *xenoi* relied on their accumulated knowledge and the accommodation offered by locals for safe landfall at one or more anchorages. This would also have been the case for ships traveling long distances within the Aegean world, as when a ship from the Argolic Gulf made landfall in a Cretan small world at the Gulf of Mirabello. The case for Mycenaean permanent presence in enclaves or colonies beyond Aegean and Ionian shorelines is equivocal at best and dubious at worst.

In closing this section, it needs to be stressed that geographically defined spheres of interaction are always contingent to time and place. I have chosen to define four maritime interaction spheres based on geographical scale, frequency of interaction, and cultural identity. They are meant to fit what we know about the political organization and maritime technology of the LBA, as well as the moderate distances and dense distribution of islands that characterize the Aegean region. It would make little sense to apply these spheres without modification to the widely dispersed islands of Oceania, or to the enormously

different conditions of political organization and maritime technology of Greece during the Roman period. Even in the Bronze Age, we can observe coastscapes emerge, thrive, decline, and disappear; small worlds alternate between cohesion and fragmentation; and long-distance connectivity of Aegean polities with the eastern and central Mediterranean fluctuate over time with the political and economic conditions of the day. For this reason, our frameworks must be flexible enough to accommodate a diachronic history of adjustment and reconfiguration. In the following chapter, I will attempt to show how such histories can be written within the maritime cultural landscape framework.

Connectivity and Social Network Theory

Following Fernand Braudel (1972), a central theme of Horden and Purcell's *The Corrupting Sea* is that the extreme fragmentation of Mediterranean coastlands and islands encourages intensive local interactions by sea, while relatively easy maritime communication allows these to be expanded to form larger networks as environmental, economic, and political conditions permit. The emphasis on microregions as the fundamental building block for networks of all sizes is no accident: “The short hops and unpredictable experiences of *cabotage* are...the basic modality for all movements of goods and peoples in the Mediterranean before the age of steam” (Horden and Purcell 2000: 365). Malkin et al. (2007: 1) describe the symbiosis of two tiny, neighboring Aegean islands, Herakleia and Schinoussa. Herakleia's harbor is protected from the southeast, Schinoussa's from the northwest. As winds and weather change, fishermen and yachtsmen rush to move their boats from one island to the other – a relatively common occurrence that illustrates another element of Horden and Purcell's paradigm, the instability and unpredictability of the Mediterranean climate. The coastal world (or “mental horizon”) of these islanders consists first of their village; second of their linked harbors; and third of the Aegean and Mediterranean beyond. This conceptualization of the maritime world conforms well to the coastscapes, small worlds, and larger spheres of interaction proposed in this chapter. Malkin and colleagues (2007: 1) call the relationship between Herakleia and Schinoussa a “fractal” of Mediterranean networks: operating at a small, local scale, but exhibiting dynamics that can extend to the whole of the Mediterranean. This analogy from the natural world is an intriguing one, but debatable – is the architecture of a local maritime network repeatable and remarkably similar at any scale? Because of the

quantum leap in knowledge and professionalism, as well as the different kinds of exchanges that characterize the transition from small worlds to larger spheres of interaction, I am skeptical that this should be so.

Yet these scholars rightly question the notion that autarchy or true isolation existed in the Aegean, insisting instead that microregions and microecologies, while distinctive, cannot be separated from the wider networks of which they form a part. Balanced against the certainty that in aggregate, small-scale interaction moved far more goods and people than did long-haul traffic, as well as the likelihood that rather few Bronze Age coastal dwellers ever ventured far from home, must be the realization that the ways that microregions interact and form clusters (i.e., connectivity) are as important as their internal features. As Horden and Purcell (2000: 465) put it, “The wider historical context is as potent a factor in the workings of the microecology as is the local physical environment or the human responses to it.” Still, I would defend the separation (however fuzzy) of the different scales of interaction for analytical purposes, in agreement with Michael Galaty and colleagues (Galaty, Parkinson et al. 2009: 43), who caution that they possess contrasting dynamics that cannot be revealed when conflated.

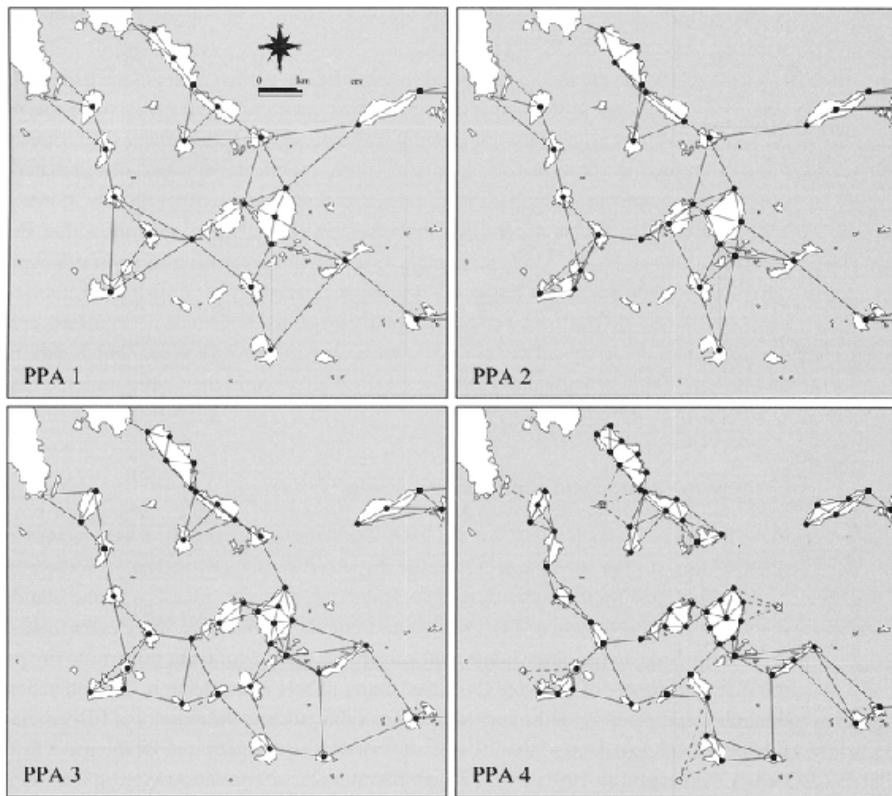
The ways that connectivity works highlight both the corporate responses of (to us, faceless) societies to opportunities and constraints of the physical and social environment, and the decisions and actions of intrepid individuals and small groups. Horden and Purcell's (2000) “four definite places” and the hundreds of other examples they offer to illustrate historical connectivity draw attention to the insights that emerge from written documents and the limits of our knowledge in the absence of them. They offer a kind of template for the establishment of maritime relations that accords agency to individual coastal settlements and their inhabitants: two ports, located a short voyage apart, have goods to exchange and people whose mutual interests and understanding of each other promote friendly relations. They make a pact to encourage exchange, and set about improving their port facilities.⁶ Local agency is a common feature of social networks, which are often understood as self-organizing systems “... due to the local decisions made by the individual vertices” (Barabási and Albert 1999: 512). Once established, such relations can become durable, carrying on in spite of the vagaries of environment, politics, and economics in the wider world, and even if the rationality and expediency of the connection itself is lost (Horden and Purcell 2000:

128). A reason for this may be the deep social ties that have developed over time. In periods of growth, the information, resources, services, and people flowing along these paths stimulate the creation of new vertices and paths, resulting in clusters that coalesce at larger and larger scales; thus, the formation of world systems from microregions.

Network Models and the Aegean Bronze Age

Two important attempts have been made at spatial modeling of maritime networks in the Aegean Bronze Age: Broodbank's (2000) for the Cycladic Islands in the EBA, and that of Knappett and colleagues (2008) more broadly for the Aegean, with a focus on the MBA. Network analysis has not been explicitly applied to the Mycenaean period.

Broodbank's network model consists of a Proximal Point Analysis (PPA) that simulates interaction networks given certain assumptions about the number and location of interacting nodes (in this case, settlements).⁷ PPA predicts patterns of connections between points distributed in space, conventionally by connecting each point with the three closest to it. The webs formed by these connections generate network clusters, as some points accumulate more links by virtue of their proximity to a larger number of other points. The denser clusters hypothetically mark out interaction “centers” where communication ought to flow most easily. The actual placement of points in the model is a problem given the fragmentary nature of the archaeological record. Broodbank addresses this by placing known sites on the map and then proceeding to add points to simulate the growth of population over time. The number and location of these points is determined by varying the amount of land area required to place a point on an island. He creates four different models (PPA 1–4) by adding a point for every 150, 100, 75, and 50 square kilometers, respectively (Fig. 6.2), and then compares the results to the apparent settlement patterns of the Neolithic to EBA Cyclades. PPA 1, with only 19 points, is taken to resemble the Neolithic–EB I pattern of low-density networks in which larger settlements and longer-distance connections are vital for survival. By contrast, the more heavily populated and highly connected EB II is simulated best by PPA 4, in which 54 points yield more localized, high-density networks and maximal small-island participation.



6.2 Broodbank's PPA versions 1–4, based on different initial and growth conditions. Broodbank [2000](#): 184, fig. 53. Courtesy of Cambridge University Press.

Broodbank's PPA is, like any other model, laden with assumptions, simplifications, and choices that affect its utility in representing reality (Knappett et al. [2008](#): 1010). In this case, it is assumed that communities interact most intensely with their nearest neighbors, since longer journeys are riskier and more time consuming. Sea travel is taken to be uniform in all directions. Sites are deemed to be of roughly equal size and distributed evenly in space among the islands. The links between them are similarly undifferentiated: one node can connect with any other directly or through a series of short hops as constrained by the available propulsion technologies of rowing and paddling. The only variables that can be adjusted to induce change are the number of sites in the system or the number of links each site can form. While this set of rules and assumptions obviously oversimplifies and distorts the reality of these networks, it is important to recognize that Broodbank's PPA was designed for the limited geographical world

of the Cyclades and for a time in which boats were propelled by human power. Settlements were smaller and less hierarchically organized than in the later Minoan and Mycenaean palatial worlds. Within these bounded circumstances, the model can claim some success in explaining the presence or absence of certain centers around the Cyclades. For example, no such center is known on the large island of Andros, which in spite of possessing fresh water and arable land, is shown to be out of the mainstream of near-neighbor connectivity; conversely the settlement of Daskaleio-Kavos flourished on tiny, resource-poor Keros in the Erimonisia group by virtue of its position in a dense web of crisscrossing links. The fit, in terms of prominence or insignificance of sites, between the model and the archaeological record is not perfect, but Broodbank's analysis does demonstrate that network centrality was an important factor in the role that specific settlements played in maritime connectivity and in the way that clusters of small worlds were constructed. Yet PPA is limited in its application – it is not likely to simulate eras with large travel ranges well, or translate easily to greater geographical scales.

Knappett et al. (2008) sought to build on Broodbank's beginnings to devise a more sophisticated network model with wider applicability. Their model, which they characterize as “imperfect optimisation,” uses a detailed mathematical equation to express the notion that participants in a network tend to strike a reasonable, though never perfectly optimal, balance between the costs and benefits of maintaining maritime connections. The model is far more flexible because it incorporates more of the variables that influence connectivity and allows the weight of each variable to be modified, either experimentally or to reflect current understandings of the archaeological record.

To assess the likelihood of connection between two sites, or the connective potential of any single site in a network, each site is coded with several variables, including a kind of estimate of importance based on site size, population, and available resources. Where the connectivity between any two sites is concerned, the energy required to maintain contacts is a combination of the physical distance between them and the fraction of effort each devotes to the interaction. These values lead to an equation:

$$H = -\kappa R - \lambda E + jP + \mu T,$$

where H yields a quantitative representation of the energy balance

between the costs of supporting the local population (P) versus the costs of maintaining links (T), and the benefits of exploiting local resources (R) versus the benefits of maintaining links (E). The characters κ , λ , j , and μ are constants that record the relative importance or weight accorded to each factor. The flexibility of this model resides in accommodating a broader number of variables that can influence connectivity, as well as the ability to alter variables as population, settlement patterns, or technologies (e.g., seafaring or mining) evolve. At the same time, the ratios of the constants can be modified to reflect different cost–benefit relationships between local affairs and nonlocal interaction.

Even with this more sophisticated and encompassing approach, Knappett's model carries its own assumptions and simplifications. A central assumption is the network centrality of large sites, like Knossos, which are more connected than smaller sites and attract new connections preferentially because of their greater ability to acquire and control the resources needed to sustain and benefit from overseas contacts. Further, large communities tend to target each other, creating longer-distance connections and network hierarchies. This “gravitational pull” can aid in linking distant settlements and holding large-scale networks together. The disproportionate role of well-positioned nodes finds strong support in network theory. Albert-László Barabási and Réka Albert (1999) describe two common properties of networks: continuous *growth* by the addition of new vertices (i.e., nodes or points), and *preferential attachment* by which new vertices attach disproportionately to sites that are already well connected. These patterns can be observed in many kinds of social networks, such as the linking of documents in the World Wide Web or the preferential citation of certain articles in scientific literature (Barabási and Albert 1999: 510). These dynamics have several implications for Aegean Bronze Age maritime networks. One is that a node that acquires more connections than another one will accumulate them at an increasing rate, causing the difference in connectivity between the two to multiply as the network grows (Barabási and Albert 1999: 511). Such conditions may help explain the emergence of Mycenae during the Shaft Grave Era, with its wide access to exotic goods, or the rise of Knossos to an unparalleled position on Crete. Furthermore, the rapid growth in disparity between well- and less well-connected sites may result in the kind of explosive growth to prominence that seems to describe Mycenae in the Shaft Grave Era.

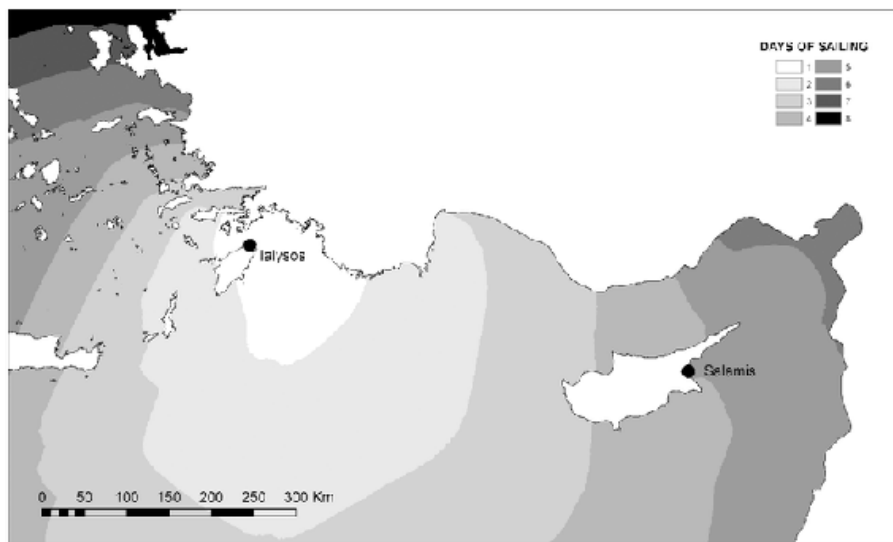
With the advance of seafaring technology and the emergence of

large centers in protopalatial Crete, conditions were set for Aegean-scale networks to grow, requiring a model of greater scope and variability than Broodbank's PPA. Knappett and colleagues published a few variations on the imperfect optimisation model, including one in which the benefits of trade were incrementally increased ($\lambda = 1.0, 2.0, 3.0,$ and 4.0 : Knappett et al. 2008: 1015–1016, fig. 4). At each increment, the links between geographically distant areas of the Aegean – the mainland, Cycladic Islands, Crete, the Dodecanese and Asia Minor – strengthened and particularly well-positioned sites such as Akrotiri on Thera became crucial “intermediate” nodes in holding the larger network together, in spite of their modest size. Removing these nodes, as when Thera was destroyed in a volcanic cataclysm in the middle second millennium BC, can (and did) cause major disruptions in the broader network (Knappett et al. 2011).

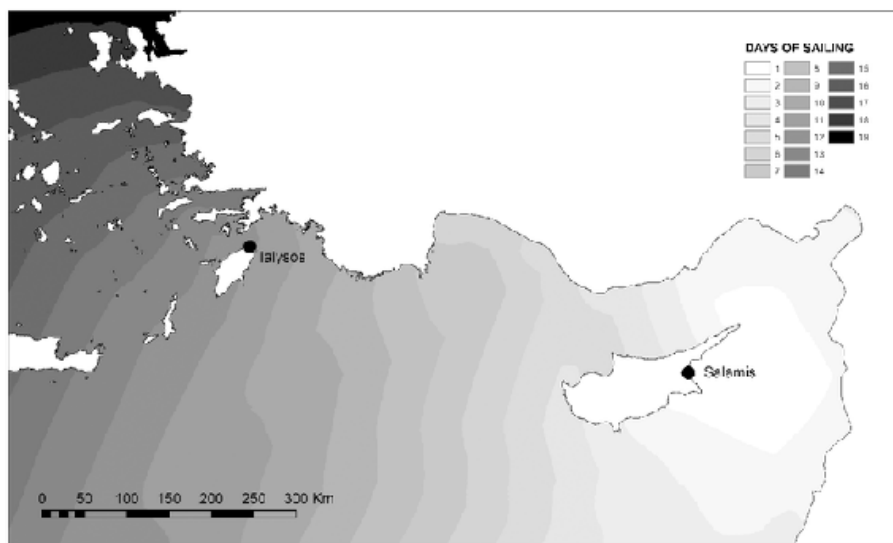
When a PPA analysis was performed on the same data set according to Broodbank's rules, however, Crete failed to link to the Cyclades, and the Dodecanese Islands were entirely isolated from all other Aegean networks (Knappett et al. 2008: 1019, fig. 7). This is hardly surprising as it is difficult to generate large-scale networks when a node can only connect to its three nearest neighbors. Social network theory⁸ predicts the constant addition of new vertices and the creation of shortcuts between well-connected nodes, linking local clusters into “small worlds” (Watts and Strogatz 1998) and further to large-scale networks that may feature direct connections between powerful centers, or emporia that attract connections from the entire sailing universe.

Knappett's model can be manipulated to simulate admirably enough the kinds of networks that plausibly existed in the MBA Aegean, but it too has limitations, mainly the ambiguity of the quantitative value of the variables and constants that the mathematical equations use. How exactly, we might ask, are numerical values calculated for abstract concepts or data fields for which there is only fragmentary information? A few examples will illustrate this problem. The means of quantifying the “fraction of effort” that one site puts into its relationship with another is not explained; it seems perhaps to be equated with the fraction of trade, but how this is derived is unknown (Knappett et al. 2008: 1014, fig. 2). Part of the effort of maintaining the connection involved the ease or difficulty of intersite travel, but in this model distance and travel remain simplistic. While Knappett and colleagues recognize the need to arrive at travel times (“daily transport distance”) rather than simple linear distances, the model

does not incorporate any calibrations and we are left with a uniform, essentially friction-free sea. In a dissertation on Roman maritime trade in the eastern Mediterranean, Leidwanger (2011: 90–121) takes initial steps toward a textured seascape by constructing a GIS model using wind speed and directional data, as well as historical sources and sea-trial data from the replica ship *Kyrenia II*, to arrive at a friction factor, which is finally converted into a buffered map of sailing days from a given location. These maps of “cost weighted path distance” can be used to estimate the differences in travel for outbound and return voyages. For instance, applying the friction factor, the sailing time from Ialysos on Rhodes in the southeastern Aegean to Salamis on eastern Cyprus should be around four days, whereas the voyage in the other direction could take more than eleven (Leidwanger 2011: figs. 2.7, 2.10; Fig. 6.3). This kind of information would be valuable as an input for Knappett's distance and effort variables. Even these advances leave room for development, since one could envision friction factors incorporating currents as well as a stochastic element for storms and other hazards.



(a)



(b)

6.3 Maps of cost-weighted path distance for eastbound and westbound journeys in the eastern Mediterranean. (a) Sailing days from Ialysos, Rhodes; (b) Sailing days from Salamis, Cyprus. Courtesy of Justin Leidwanger.

Other ambiguities arise as an inescapable result of the fragmentary nature of the archaeological record. Population (let alone population density) and carrying capacity figures are simply not available for most LBA settlements, at least not without wide margins of error. Lacking reliable quantitative data for these and other categories,

calculations of site importance or cost–benefit for local and long-distance interaction are necessarily open to challenge. It is the double quandary of acquiring robust numerical values for structural features and then translating them through mathematical equations into social behavior that has led many historians and archaeologists to adopt a cautious attitude (Malkin et al. 2007: 6). One could continue the discussion along these lines, but it is sufficient to conclude at this point that social network analyses hold promise, as yet not realized. With further development and robust data, they have the potential to reconstruct maritime social and economic networks for prehistory, and to identify the dominant engines driving their formation and change over time. The purpose of the present critique is not to advance a skeptical position, or to deliver a new, improved network model. Instead, I wish to expose the potential pitfalls of working with quantitative models that, if not invested with robust empirical data, give results that may seem authoritative but are in fact illusory. These are concerns of which Broodbank and Knappett were quite aware; hence their cautionary statements. I also want to alert readers that in the case studies to follow in the next chapter, data are often not amenable to quantification. In such cases, I follow Malkin and colleagues in adopting more qualitative characterizations of the maritime networks that I seek to analyze.

Seven Coastscapes and Small Worlds of the Aegean Bronze Age

Case Studies

The purpose of this chapter is to bring together the various conceptual and empirical approaches outlined in previous chapters in order to apply them to real-world times and places of the Aegean Bronze Age. In three case studies, this chapter suggests how we might write diachronic histories of maritime connectivity at local to regional scales of interaction. One lengthy case study is drawn from the “heartland” of the Mycenaean world in the Saronic Gulf, followed by two brief portrayals of potential coastscapes and small worlds, one focused on Miletos on the coast of southwestern Asia Minor, and the other on Dimini and neighboring sites on the Bay of Volos, which are meant to suggest opportunities for further research along the lines advocated in this book.

This exercise aims to reveal the trajectories over time of coastscapes that may range from isolated to highly connected, and of small worlds that oscillate between cohesion and fragmentation, which often means alternating between hierarchical and heterarchical or nonhierarchical organizational structures. It focuses both on internal dynamics and on the ways that external stimuli – opportunities, threats, and greater historical currents – impinge to play often profound roles in local and small-regional histories. Placing a primary emphasis on coastscapes and small worlds means eliciting rich local contexts from which to build out to broader spheres of interaction (Galaty, Parkinson et al. 2009; Tartaron 2010; Wright 2010: 808, 815). These case studies construct histories *in* the Mediterranean, because only when these are robust can they offer comparative material to the grand project of history *of* the Mediterranean (Horden and Purcell 2000).

Making and Breaking a Small World: The Saronic Gulf, 3000–1200 BC

The essential aim of this case study is a diachronic reconstruction of a Bronze Age maritime small world in the Saronic Gulf. The inhabitants of Kolonna on the island of Aigina dominated this small world of many coastscapes – coastal settlements dotting the islands and mainland – from the middle of the EBA until the early phases of the LBA, when the expanding palace at Mycenae broke it apart, incorporating Saronic communities into broader Aegean networks. Over its life, this small world alternated between cohesion and fragmentation, as Kolonna responded to conditions within the Gulf and without, often initiated by events taking place beyond the Saronic and affecting large parts of the Aegean. I will attempt to write this history primarily from two vantage points: from the center at Kolonna; and from the small Bronze Age settlement at Kalamianos, built upon a gently inclined shoreline near Korphos on the Saronic's western coast. Kalamianos was a rather minor player for most of the period under consideration, only achieving prominence in EH II and LH IIIB. Other settlements in Kolonna's orbit will be called upon to fill in aspects of the story.

The Physical Environment of the Saronic Gulf

The Saronic Gulf occupies a central place in Greek maritime history, in part because of favorable sailing conditions and a strategic geographical situation (Fig. 7.1). It is partially enclosed by the land masses of the Argolid, the Corinthia, and Attica; as a consequence, winds, waves, and currents are moderate compared with more open areas of the Aegean Sea (Heikell 2002: 17, 29; Soukissian et al. 2002). The winds are reasonably consistent, especially in the summer months. The meltemi blows from the north to northeast, beginning fitfully in July and increasing to full strength in August to early September before diminishing thereafter. It generally blows in the Beaufort 3–5 range (gentle breeze to fresh breeze), though in peak season it reaches 5–6 (fresh breeze to strong breeze) and occasionally higher. Winter winds are less consistent and winds up to gale force are more frequent, though hardly common. Waves are rarely significant enough to be damaging to coastal areas or dangerous to maritime traffic, and there is a minimal effect from the currents of the Black Sea Waters, mainly in the form of some strong anticyclonic eddies at the mouth of the Gulf (Olson et al. 2007). These currents, combined with meltemi winds, can make for a bumpy ride departing the Saronic for the Cyclades (Heikell 2002: 29, 52). Isolated storms with associated squalls may arise at any time of year, though they are not common in the warmer months and they seldom last for more than an hour or two. The Saronic has relatively few dangerous reefs and rocks,

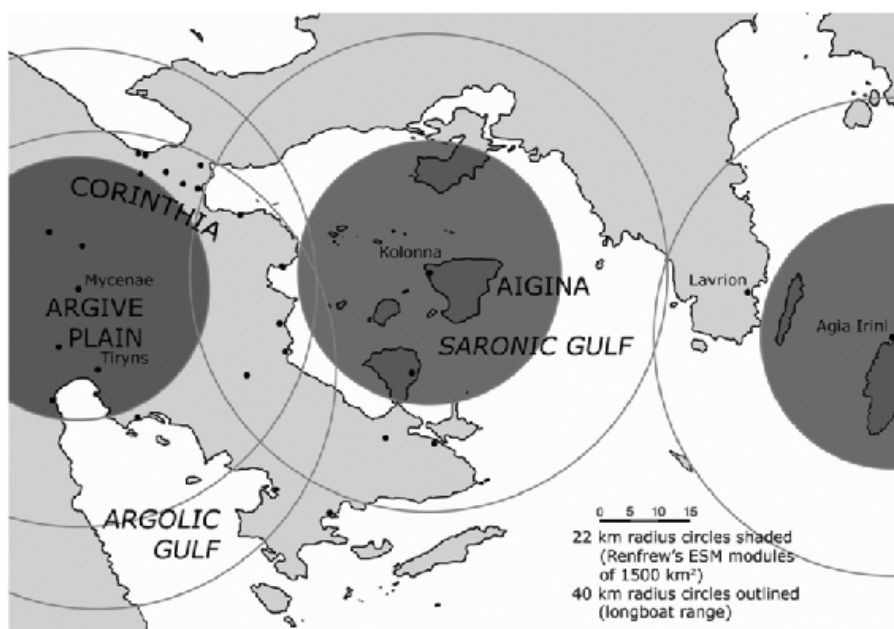
excepting those quite close to shore and those in the narrows between small islands or between islands and offshore islets. While these mean characteristics establish the Saronic as an inviting maritime environment, there are local variations and exceptions to each. To give two examples: hazardous shoal waters extend southwest from the harbor at Aigina town (ancient Kolonna) through the islet of Metopi to Angistri; and strong westerly to northwesterly winds can blow from the Gulf of Corinth to produce severe gusts along the western side of the Saronic south to Epidauros (Heikell 2002: 61, 74–75). Further, each anchorage has unique characteristics that vary during the course of the year; the reader is referred to the discussion of Kapsali Bay, Kythera in [Chapter 4](#) for an account of typical Aegean variability.



7.1 Map of the Saronic Gulf region with important Bronze Age sites indicated. Pullen and Tartaron 2007: 147, fig. 14.1. Courtesy of the Cotsen Institute Press.

Sea travel in the Saronic is enhanced by large and small islands and moderate distances throughout. No trip within the Gulf approaches the 100-kilometer daily range proposed in the previous chapter for Bronze Age sailing under normal conditions. Even paddled longboats of the EBA could complete virtually any one-way trip in a single day given the 40-kilometer range proposed by Broodbank (2000: 287–289), and many round trips were possible in a day or less ([Fig. 7.2](#)). There are many islands of all sizes in the Saronic, even if we discount the tiny rocks that could not accommodate even a small boat. There

are two particularly large islands, Aigina and Salamis, and in this category we might also count the *presqu'isle* of Methana, attached by the narrowest of necks to the Peloponnesian mainland but behaving in most respects as an island. Just a bit smaller is the island of Poros, in this case separated from the mainland only by a narrow channel several kilometers south of Methana. Angistri to the west of Aigina is somewhat smaller than Poros, but after this there is a drop-off to very small and tiny islands with far fewer usable anchorages. Nevertheless, for the reasonably experienced sailor there is shelter and good anchorage within reach throughout the Gulf.¹



7.2 Comparative ranges of transportation modes in the Saronic Gulf region. Pullen and Tartaron 2007: 154, fig. 14.4. Courtesy of the Cotsen Institute Press.

The Saronic Gulf is a crossroads by sea and land. By sea, it is the entrance from the open Aegean to the land masses of western Attica and the northeastern Peloponnese. From the Cyclades, the Saronic is the sea passage to the Isthmus of Corinth, and by crossing that narrow neck of land, to the Corinthian Gulf and the West. The presence of Aiginetan pottery at coastal sites on the Corinthian Gulf in the MBA suggests that the Isthmus was already used for that purpose. The Isthmus was also the land connection from southern to central Greece. At various times in history, states centered at Aigina, Corinth, Athens, and Nauplion laid claim to control of the Saronic as a fundamental basis of their economic and political power.

The Social Environment of the Saronic Gulf

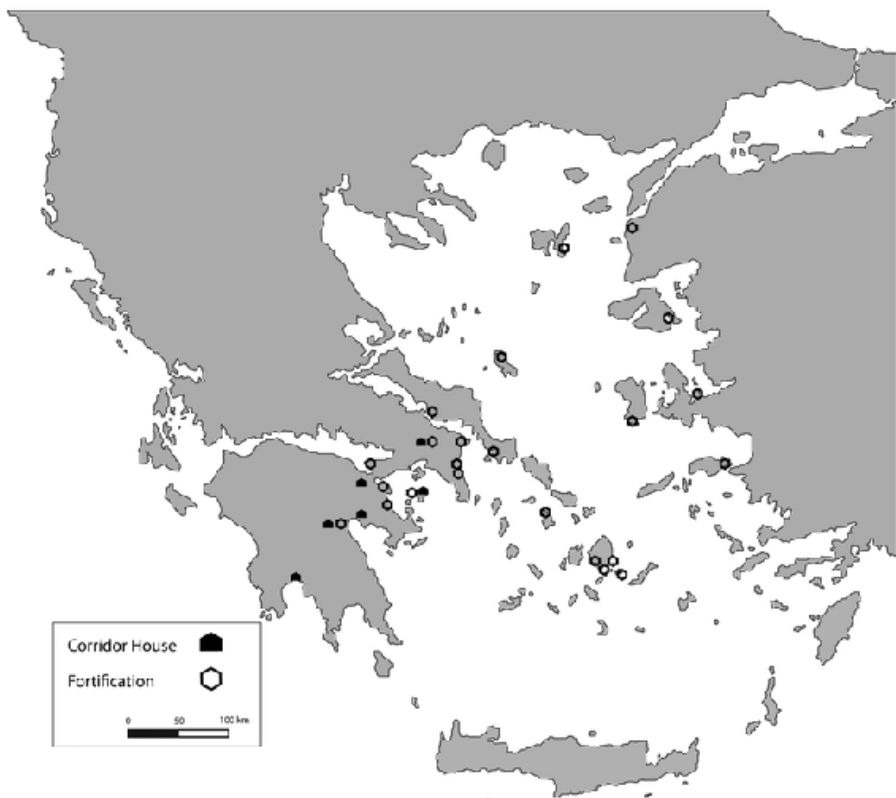
An argument for the existence of a Saronic small world can continue with a phenomenological perspective. Aigina is situated in the geographical center of the Saronic Gulf, with the land masses of Attica, the Corinthia, and the Argolid nearly encircling it. Intervisibility to and from Aigina is exceptionally high: Aigina is a large island with a distinctive shape – the pointed peak of Mt. Oros is unmistakable – that looms on the near horizon from most coastal vantage points. With some exceptions, the Saronic coastline is rugged, with an abundance of small anchorages attached to diminutive coastal plains or to sheer coastal cliffs. Small coastal settlements tend to be perched on headlands or limited coastal lowlands backed by high mountains that block views, and easy access, to the interior. Thus the everyday field of view is directed toward the sea, to other coastal settlements, and especially to Aigina. Looking upon the Saronic, one perceives not boundless sea, but islands and coasts occupying much of the horizon at distances manageable for small craft. The phenomenological experience of inhabiting one of these communities reverses the common expression of looking *out* to sea, by giving the sense instead of settlements orbiting around and looking *into* the center at Kolonna. The visual element of connectivity so keenly highlighted by Horden and Purcell finds a perfect expression in the Saronic. We may hypothetically suggest that intervisibility, combined with moderate distances and relatively easy sea voyaging, promoted the perception of being part of an organically constituted, coherent world. Opportunities for forging ties with other coastal settlements must certainly have flowed from these advantages, but at times there must also have been social imperatives, including mutual arrangements to buffer the risk of resource failure, and the practice of exogamy to maintain the genetic viability of small communities and to cement the social ties needed to perpetuate vital relationships (Bintliff 2010).

Kolonna and the Bronze Age Saronic Small World

The promontory of Kolonna on the northwestern coast of Aigina was occupied during the Neolithic period at least as early as the fourth millennium BC. The natural advantages of the site are evident: it is elevated 12 meters above sea level and protected by cliffs on three sides, with a double embayment to the south and north and abundant arable land to the east (Felten 2007: 12). Although the shallow harbor at Kolonna – later Aigina town – was considered in Antiquity to be

among the most hazardous in the Aegean to approach, it repeatedly served as the main port of powerful Aiginetan states from the Bronze Age to the Archaic period. This disadvantage did not outweigh the location's other natural benefits, or the social and economic will of the city's inhabitants to succeed in spite of environmental shortcomings.

An incipient maritime small world may have come into being in the Saronic as early as the Late or Final Neolithic. It has been demonstrated that Aigina was the main source of andesite for millstones in Attica and the Peloponnese by the later Neolithic period (Runnels 1985a), and a “Saronic” fabric that appears macroscopically to be tempered with volcanic-related inclusions characteristic of Aigina is common among the FN to EBA pottery sherds recovered during a recent surface survey in the Korphos region (D. Pullen, personal communication 2001). The center at Kolonna comes into clearer focus in a mature phase of EB II in the Aegean. This was a time of increasing social complexity that witnessed the emergence of chiefdoms, the erection of fortifications at many sites, and vigorous exchange of exotic items with presumably high social value, including bronze daggers and tools, metal jewelry, fine drinking and pouring vessels of metal, and ceramic and marble vessels and figurines; in short, an era of “international spirit” (Renfrew 1972: 451–55). The relatively undifferentiated pattern of small farmsteads and hamlets in the preceding EB I period was transformed by a striking expansion of settlement and the appearance of large settlements, particularly at coastal locations oriented to maritime activity (Broodbank 2000: 279–87; Konsola 1986; Pullen 2003). This was also the time of the monumental “corridor houses” with long passages flanking the internal rooms found on the Greek mainland and at Kolonna itself (Fig. 7.3). These structures have been variously interpreted as palaces, administrative centers, residences of prominent families or lineages, or even hotels or meeting halls for traders (Felten 1986; Nilsson 2004; Pullen 1986; Shaw 1987; Weingarten 1997; Wiencke 1989).



7.3 Map showing the locations of corridor houses and fortifications in the EB II Aegean. After Tartaron, Pullen, and Noller 2006: 147, fig. 3.

Bronze Age Kolonna is a highly complex archaeological site, with nine separate urban phases or “cities,” including massive fortification walls that were modified and strengthened over a period of 500 years (Table 7.1). From the EBA to the beginning of the LBA, roughly 2500 to 1400 BC, Kolonna was a site without peer in the Aegean outside of the brilliant Minoan civilization on Crete to the south (Rutter 2001: 125–30). Some believe that Kolonna achieved the first Aegean state-level society after the Minoans and before the Mycenaeans (Niemeier 1995).

During EH II (Kolonna phases II–III; circa 2700–2200 BC), Kolonna was a modest settlement of mudbrick houses, but had already begun to distinguish itself from other coastal and island sites in the Saronic and beyond. There is evidence of economic specialization in the production of textiles in the “Färberhaus” (phase III) and storage of agricultural surplus in the “House of the Pithoi” (phase III; Felten

2007). The monumental corridor house known as the “Weißes Haus” of phase III (along with its predecessor the “Haus am Felsrand” of phase II) may have played a central administrative role in the community. In its layout and construction, the Weißes Haus exhibits particularly close parallels to the House of the Tiles at Lerna, indicating early and meaningful relations (Shaw 2007; Wiencke 2000: 298–303). Ongoing excavations at Kolonna are revealing a number of large buildings in phase III, however, so the former impression of the Weißes Haus as singular in its size and complexity may be giving way to the picture of “...an accumulation of more or less homogeneous self-sufficient unities” (Felten 2007: 13).

By the latter centuries of the second millennium in EH III (Kolonna phases IV–VI early; circa 2200–2000 BC), Kolonna had been transformed into one of the most significant urban centers of the Aegean: a densely populated, heavily fortified town with monumental stone buildings and sophisticated town planning with buildings arranged in *insulae* separated by gravel roads. Beginning in EH III, pottery was imported, and stylistic influences on local pottery were adopted, from the Peloponnese, central Greece, and the Cycladic islands (Gauß and Smetana 2008: 329, 2010: 167); and by the beginning of the MBA, these same areas had begun to import Aiginetan tableware, storage vessels, and cooking pots (Lindblom 2001: 40–42, 131–32). There is some evidence in phase IV for a copper-smelting operation.

By EH III, all around Aigina the “international spirit” had broken down, ushering in a period of diminished activity and even abandonment over much of the Saronic and northeastern Peloponnese, which endured until the last phases of the MBA. Although there are variations across the area, the trend is a strong one that is clearly documented by both survey and excavation data (Wright 2004: 119–28). The inland Nemea Valley in the southern Corinthia is a particularly well-studied example, having been targeted by an intensive surface survey and a long-term excavation at Tsoungiza, its most prominent prehistoric settlement. These investigations indicate that the valley suffered virtually complete abandonment from sometime in EH III to MH III/LH I, a phenomenon sometimes known as the “Middle Helladic hiatus” (Cherry and Davis 2001: 151–55; Wright 2004: 119–28; Wright et al. 1990: 628–29). The reasons for this nadir in human activity are not well known: in the case of the Nemea Valley, flooding of the valley floor has been postulated (Cherry and Davis 2001: 155–56); elsewhere, finds of daggers, spear points,

and sling stones at fortified coastal sites in the Aegean suggest violent destructions (Branigan 1999; Doumas 1990).

Table 7.1. Chronological chart for Kolonna (after Wild et al. 2010: 1020, table 3)

Cultural period, chronological (20th and 21st century) and stratigraphic (locality) [1]	Stratigraphic phase	Ceramic phase	Stratigraphic units				Key events / first appearance	Boundary between ceramic phases	
			1	2	3	4		Localised and boundary date (80-95% probability [2])	Modelled and boundary date (80-95% probability [2])
Substratum (1000)	I	Phase A (1)							
III E	II	Phase B							
a: LBA III 1 (1000/1000 to 1000/1000 BC)	III (Phase C)	Phase C							
III E	IV	Phase D					Peloponnesian		
a: LBA III 2 (1000/1000 to 1000/1000 BC)	V (Phase E)	Phase E					Evolution of the	beginning of I	earlier than 1000 BC [2]
b: LBA III 3 (1000/1000 to 1000/1000 BC)	VI	Phase F					Cycladic (after 1000 BC)	boundary I/II	1000 to 1000 BC
c: LBA III 4 (1000/1000 to 1000/1000 BC)	VII	Phase G					Local Cycladic (after 1000 BC)		earlier than 1000 BC [2]
d: LBA III 5 (1000/1000 to 1000/1000 BC)	VIII	Phase H					Local Cycladic (after 1000 BC)	boundary II/III	1000 to 1000 BC
e: LBA III 6 (1000/1000 to 1000/1000 BC)	IX	Phase I					Local Cycladic (after 1000 BC)	boundary III/IV	1000 to 1000 BC
f: LBA III 7 (1000/1000 to 1000/1000 BC)	X	Phase J					Local Cycladic (after 1000 BC)	boundary IV/V	1000 to 1000 BC
g: LBA III 8 (1000/1000 to 1000/1000 BC)	XI	Phase K					Local Cycladic (after 1000 BC)	boundary V/VI	1000 to 1000 BC
h: LBA III 9 (1000/1000 to 1000/1000 BC)	XII	Phase L					Local Cycladic (after 1000 BC)	boundary VI/VII	1000 to 1000 BC
i: LBA III 10 (1000/1000 to 1000/1000 BC)	XIII	Phase M					Local Cycladic (after 1000 BC)	boundary VII/VIII	1000 to 1000 BC
j: LBA III 11 (1000/1000 to 1000/1000 BC)	XIV	Phase N					Local Cycladic (after 1000 BC)	boundary VIII/IX	1000 to 1000 BC
k: LBA III 12 (1000/1000 to 1000/1000 BC)	XV	Phase O					Local Cycladic (after 1000 BC)	boundary IX/X	1000 to 1000 BC
l: LBA III 13 (1000/1000 to 1000/1000 BC)	XVI	Phase P					Local Cycladic (after 1000 BC)	boundary X/XI	1000 to 1000 BC
m: LBA III 14 (1000/1000 to 1000/1000 BC)	XVII	Phase Q					Local Cycladic (after 1000 BC)	boundary XI/XII	1000 to 1000 BC
n: LBA III 15 (1000/1000 to 1000/1000 BC)	XVIII	Phase R					Local Cycladic (after 1000 BC)	boundary XII/XIII	1000 to 1000 BC
o: LBA III 16 (1000/1000 to 1000/1000 BC)	XIX	Phase S					Local Cycladic (after 1000 BC)	boundary XIII/XIV	1000 to 1000 BC
p: LBA III 17 (1000/1000 to 1000/1000 BC)	XX	Phase T					Local Cycladic (after 1000 BC)	boundary XIV/XV	1000 to 1000 BC
q: LBA III 18 (1000/1000 to 1000/1000 BC)	XXI	Phase U					Local Cycladic (after 1000 BC)	boundary XV/XVI	1000 to 1000 BC
r: LBA III 19 (1000/1000 to 1000/1000 BC)	XXII	Phase V					Local Cycladic (after 1000 BC)	boundary XVI/XVII	1000 to 1000 BC
s: LBA III 20 (1000/1000 to 1000/1000 BC)	XXIII	Phase W					Local Cycladic (after 1000 BC)	boundary XVII/XVIII	1000 to 1000 BC
t: LBA III 21 (1000/1000 to 1000/1000 BC)	XXIV	Phase X					Local Cycladic (after 1000 BC)	boundary XVIII/XIX	1000 to 1000 BC
u: LBA III 22 (1000/1000 to 1000/1000 BC)	XXV	Phase Y					Local Cycladic (after 1000 BC)	boundary XIX/XX	1000 to 1000 BC
v: LBA III 23 (1000/1000 to 1000/1000 BC)	XXVI	Phase Z					Local Cycladic (after 1000 BC)	boundary XX/XXI	1000 to 1000 BC
w: LBA III 24 (1000/1000 to 1000/1000 BC)	XXVII	Phase AA					Local Cycladic (after 1000 BC)	boundary XXI/XXII	1000 to 1000 BC
x: LBA III 25 (1000/1000 to 1000/1000 BC)	XXVIII	Phase AB					Local Cycladic (after 1000 BC)	boundary XXII/XXIII	1000 to 1000 BC
y: LBA III 26 (1000/1000 to 1000/1000 BC)	XXIX	Phase AC					Local Cycladic (after 1000 BC)	boundary XXIII/XXIV	1000 to 1000 BC
z: LBA III 27 (1000/1000 to 1000/1000 BC)	XXX	Phase AD					Local Cycladic (after 1000 BC)	boundary XXIV/XXV	1000 to 1000 BC
aa: LBA III 28 (1000/1000 to 1000/1000 BC)	XXXI	Phase AE					Local Cycladic (after 1000 BC)	boundary XXV/XXVI	1000 to 1000 BC
ab: LBA III 29 (1000/1000 to 1000/1000 BC)	XXXII	Phase AF					Local Cycladic (after 1000 BC)	boundary XXVI/XXVII	1000 to 1000 BC
ac: LBA III 30 (1000/1000 to 1000/1000 BC)	XXXIII	Phase AG					Local Cycladic (after 1000 BC)	boundary XXVII/XXVIII	1000 to 1000 BC
ad: LBA III 31 (1000/1000 to 1000/1000 BC)	XXXIV	Phase AH					Local Cycladic (after 1000 BC)	boundary XXVIII/XXIX	1000 to 1000 BC
ae: LBA III 32 (1000/1000 to 1000/1000 BC)	XXXV	Phase AI					Local Cycladic (after 1000 BC)	boundary XXIX/XXX	1000 to 1000 BC
af: LBA III 33 (1000/1000 to 1000/1000 BC)	XXXVI	Phase AJ					Local Cycladic (after 1000 BC)	boundary XXX/XXXI	1000 to 1000 BC
ag: LBA III 34 (1000/1000 to 1000/1000 BC)	XXXVII	Phase AK					Local Cycladic (after 1000 BC)	boundary XXXI/XXXII	1000 to 1000 BC
ah: LBA III 35 (1000/1000 to 1000/1000 BC)	XXXVIII	Phase AL					Local Cycladic (after 1000 BC)	boundary XXXII/XXXIII	1000 to 1000 BC
ai: LBA III 36 (1000/1000 to 1000/1000 BC)	XXXIX	Phase AM					Local Cycladic (after 1000 BC)	boundary XXXIII/XXXIV	1000 to 1000 BC
aj: LBA III 37 (1000/1000 to 1000/1000 BC)	XXXX	Phase AN					Local Cycladic (after 1000 BC)	boundary XXXIV/XXXV	1000 to 1000 BC
ak: LBA III 38 (1000/1000 to 1000/1000 BC)	XXXXI	Phase AO					Local Cycladic (after 1000 BC)	boundary XXXV/XXXVI	1000 to 1000 BC
al: LBA III 39 (1000/1000 to 1000/1000 BC)	XXXXII	Phase AP					Local Cycladic (after 1000 BC)	boundary XXXVI/XXXVII	1000 to 1000 BC
am: LBA III 40 (1000/1000 to 1000/1000 BC)	XXXXIII	Phase AQ					Local Cycladic (after 1000 BC)	boundary XXXVII/XXXVIII	1000 to 1000 BC
an: LBA III 41 (1000/1000 to 1000/1000 BC)	XXXXIV	Phase AR					Local Cycladic (after 1000 BC)	boundary XXXVIII/XXXIX	1000 to 1000 BC
ao: LBA III 42 (1000/1000 to 1000/1000 BC)	XXXXV	Phase AS					Local Cycladic (after 1000 BC)	boundary XXXIX/XXXX	1000 to 1000 BC
ap: LBA III 43 (1000/1000 to 1000/1000 BC)	XXXXVI	Phase AT					Local Cycladic (after 1000 BC)	boundary XXXX/XXXXI	1000 to 1000 BC
aq: LBA III 44 (1000/1000 to 1000/1000 BC)	XXXXVII	Phase AU					Local Cycladic (after 1000 BC)	boundary XXXXI/XXXXII	1000 to 1000 BC
ar: LBA III 45 (1000/1000 to 1000/1000 BC)	XXXXVIII	Phase AV					Local Cycladic (after 1000 BC)	boundary XXXXII/XXXXIII	1000 to 1000 BC
as: LBA III 46 (1000/1000 to 1000/1000 BC)	XXXXIX	Phase AW					Local Cycladic (after 1000 BC)	boundary XXXXIII/XXXXIV	1000 to 1000 BC
at: LBA III 47 (1000/1000 to 1000/1000 BC)	XXXXX	Phase AX					Local Cycladic (after 1000 BC)	boundary XXXXIV/XXXXV	1000 to 1000 BC
au: LBA III 48 (1000/1000 to 1000/1000 BC)	XXXXXI	Phase AY					Local Cycladic (after 1000 BC)	boundary XXXXV/XXXXVI	1000 to 1000 BC
av: LBA III 49 (1000/1000 to 1000/1000 BC)	XXXXXII	Phase AZ					Local Cycladic (after 1000 BC)	boundary XXXXVI/XXXXVII	1000 to 1000 BC
aw: LBA III 50 (1000/1000 to 1000/1000 BC)	XXXXXIII	Phase BA					Local Cycladic (after 1000 BC)	boundary XXXXVII/XXXXVIII	1000 to 1000 BC
ax: LBA III 51 (1000/1000 to 1000/1000 BC)	XXXXXIV	Phase BB					Local Cycladic (after 1000 BC)	boundary XXXXVIII/XXXXIX	1000 to 1000 BC
ay: LBA III 52 (1000/1000 to 1000/1000 BC)	XXXXXV	Phase BC					Local Cycladic (after 1000 BC)	boundary XXXXIX/XXXXX	1000 to 1000 BC
az: LBA III 53 (1000/1000 to 1000/1000 BC)	XXXXXVI	Phase BD					Local Cycladic (after 1000 BC)	boundary XXXXX/XXXXXI	1000 to 1000 BC
ba: LBA III 54 (1000/1000 to 1000/1000 BC)	XXXXXVII	Phase BE					Local Cycladic (after 1000 BC)	boundary XXXXVI/XXXXXII	1000 to 1000 BC
bb: LBA III 55 (1000/1000 to 1000/1000 BC)	XXXXXVIII	Phase BF					Local Cycladic (after 1000 BC)	boundary XXXXVII/XXXXXIII	1000 to 1000 BC
bc: LBA III 56 (1000/1000 to 1000/1000 BC)	XXXXXIX	Phase BG					Local Cycladic (after 1000 BC)	boundary XXXXVIII/XXXXXIV	1000 to 1000 BC
bd: LBA III 57 (1000/1000 to 1000/1000 BC)	XXXXXX	Phase BH					Local Cycladic (after 1000 BC)	boundary XXXXIX/XXXXXV	1000 to 1000 BC
be: LBA III 58 (1000/1000 to 1000/1000 BC)	XXXXXXI	Phase BI					Local Cycladic (after 1000 BC)	boundary XXXXX/XXXXXVI	1000 to 1000 BC
bf: LBA III 59 (1000/1000 to 1000/1000 BC)	XXXXXXII	Phase BJ					Local Cycladic (after 1000 BC)	boundary XXXXVI/XXXXXVII	1000 to 1000 BC
bg: LBA III 60 (1000/1000 to 1000/1000 BC)	XXXXXXIII	Phase BK					Local Cycladic (after 1000 BC)	boundary XXXXVII/XXXXXVIII	1000 to 1000 BC
bh: LBA III 61 (1000/1000 to 1000/1000 BC)	XXXXXXIV	Phase BL					Local Cycladic (after 1000 BC)	boundary XXXXVIII/XXXXXIX	1000 to 1000 BC
bi: LBA III 62 (1000/1000 to 1000/1000 BC)	XXXXXXV	Phase BM					Local Cycladic (after 1000 BC)	boundary XXXXIX/XXXXXX	1000 to 1000 BC
bj: LBA III 63 (1000/1000 to 1000/1000 BC)	XXXXXXVI	Phase BN					Local Cycladic (after 1000 BC)	boundary XXXXX/XXXXXXI	1000 to 1000 BC
bk: LBA III 64 (1000/1000 to 1000/1000 BC)	XXXXXXVII	Phase BO					Local Cycladic (after 1000 BC)	boundary XXXXVI/XXXXXXII	1000 to 1000 BC
bl: LBA III 65 (1000/1000 to 1000/1000 BC)	XXXXXXVIII	Phase BP					Local Cycladic (after 1000 BC)	boundary XXXXVII/XXXXXXIII	1000 to 1000 BC
bm: LBA III 66 (1000/1000 to 1000/1000 BC)	XXXXXXIX	Phase BQ					Local Cycladic (after 1000 BC)	boundary XXXXVIII/XXXXXXIV	1000 to 1000 BC
bn: LBA III 67 (1000/1000 to 1000/1000 BC)	XXXXXXX	Phase BR					Local Cycladic (after 1000 BC)	boundary XXXXIX/XXXXXXV	1000 to 1000 BC
bo: LBA III 68 (1000/1000 to 1000/1000 BC)	XXXXXX	Phase BS					Local Cycladic (after 1000 BC)	boundary XXXXX/XXXXXXVI	1000 to 1000 BC
bp: LBA III 69 (1000/1000 to 1000/1000 BC)	XXXXXXI	Phase BT					Local Cycladic (after 1000 BC)	boundary XXXXVI/XXXXXXVII	1000 to 1000 BC
bq: LBA III 70 (1000/1000 to 1000/1000 BC)	XXXXXXII	Phase BU					Local Cycladic (after 1000 BC)	boundary XXXXVII/XXXXXXVIII	1000 to 1000 BC
br: LBA III 71 (1000/1000 to 1000/1000 BC)	XXXXXXIII	Phase BV					Local Cycladic (after 1000 BC)	boundary XXXXVIII/XXXXXXIX	1000 to 1000 BC
bs: LBA III 72 (1000/1000 to 1000/1000 BC)	XXXXXXIV	Phase BW					Local Cycladic (after 1000 BC)	boundary XXXXIX/XXXXXXX	1000 to 1000 BC
bt: LBA III 73 (1000/1000 to 1000/1000 BC)	XXXXXXV	Phase BX					Local Cycladic (after 1000 BC)	boundary XXXXX/XXXXXXI	1000 to 1000 BC
bu: LBA III 74 (1000/1000 to 1000/1000 BC)	XXXXXXVI	Phase BY					Local Cycladic (after 1000 BC)	boundary XXXXVI/XXXXXXII	1000 to 1000 BC
bv: LBA III 75 (1000/1000 to 1000/1000 BC)	XXXXXXVII	Phase BZ					Local Cycladic (after 1000 BC)	boundary XXXXVII/XXXXXXIII	1000 to 1000 BC
bw: LBA III 76 (1000/1000 to 1000/1000 BC)	XXXXXXVIII	Phase C1					Local Cycladic (after 1000 BC)	boundary XXXXVIII/XXXXXXIV	1000 to 1000 BC
bx: LBA III 77 (1000/1000 to 1000/1000 BC)	XXXXXXIX	Phase C2					Local Cycladic (after 1000 BC)	boundary XXXXIX/XXXXXXV	1000 to 1000 BC
by: LBA III 78 (1000/1000 to 1000/1000 BC)	XXXXXXX	Phase C3					Local Cycladic (after 1000 BC)	boundary XXXXX/XXXXXXVI	1000 to 1000 BC
bz: LBA III 79 (1000/1000 to 1000/1000 BC)	XXXXXX	Phase C4					Local Cycladic (after 1000 BC)	boundary XXXXVI/XXXXXXVII	1000 to 1000 BC
c1: LBA III 80 (1000/1000 to 1000/1000 BC)	XXXXXXI	Phase C5					Local Cycladic (after 1000 BC)	boundary XXXXVII/XXXXXXVIII	1000 to 1000 BC
c2: LBA III 81 (1000/1000 to 1000/1000 BC)	XXXXXXII	Phase C6					Local Cycladic (after 1000 BC)	boundary XXXXVIII/XXXXXXIX	1000 to 1000 BC
c3: LBA III 82 (1000/1000 to 1000/1000 BC)	XXXXXXIII	Phase C7					Local Cycladic (after 1000 BC)	boundary XXXXIX/XXXXXXX	1000 to 1000 BC
c4: LBA III 83 (1000/1000 to 1000/1000 BC)	XXXXXXIV	Phase C8					Local Cycladic (after 1000 BC)	boundary XXXXX/XXXXXXI	1000 to 1000 BC
c5: LBA III 84 (1000/1000 to 1000/1000 BC)	XXXXXXV	Phase C9					Local Cycladic (after 1000 BC)	boundary XXXXVI/XXXXXXII	1000 to 1000 BC
c6: LBA III 85 (1000/1000 to 1000/1000 BC)	XXXXXXVI	Phase C10					Local Cycladic (after 1000 BC)	boundary XXXXVII/XXXXXXIII	1000 to 1000 BC
c7: LBA III 86 (1000/1000 to 1000/1000 BC)	XXXXXXVII	Phase C11					Local Cycladic (after 1000 BC)	boundary XXXXVIII/XXXXXXIV	1000 to 1000 BC
c8: LBA III 87 (1000/1000 to 1000/1000 BC)	XXXXXXVIII	Phase C12					Local Cycladic (after 1000 BC)	boundary XXXXIX/XXXXXXV	1000 to 1000 BC
c9: LBA III 88 (1000/1000 to 1000/1000 BC)	XXXXXXIX	Phase C13					Local Cycladic (after 1000 BC)	boundary XXXXX/XXXXXXVI	1000 to 1000 BC
ca: LBA III 89 (1000/1000 to 1000/1000 BC)	XXXXXXX	Phase C14					Local Cycladic (after 1000 BC)	boundary XXXXVI/XXXXXXVII	1000 to 1000 BC
cb: LBA III 90 (1000/1000 to 1000/1000 BC)	XXXXXX	Phase C15					Local Cycladic (after 1000 BC)	boundary XXXXVII/XXXXXXVIII	1000 to 1000 BC
cc: LBA III 91 (1000/1000 to 1000/1000 BC)	XXXXXXI	Phase C16					Local Cycladic (after 1000 BC)	boundary XXXXVIII/XXXXXXIX	1000 to 1000 BC
cd: LBA III 92 (1000/1000 to 1000/1000 BC)	XXXXXXII	Phase C17					Local Cycladic (after 1000 BC)	boundary XXXXIX/XXXXXXX	1000 to 1000 BC
ce: LBA III 93 (1000/1000 to 1000/1000 BC)	XXXXXXIII	Phase C18					Local Cycladic (after 1000 BC)	boundary XXXXX/XXXXXXI	1000 to 1000 BC
cf: LBA III 94 (1000/1000 to 1000/1000 BC)	XXXXXXIV	Phase C19					Local Cycladic (after 1000 BC)	boundary XXXXVI/XXXXXXII	1000 to 1000 BC
cg: LBA III 95 (1000/1000 to 1000/1000 BC)	XXXXXXV	Phase C20					Local Cycladic (after 1000 BC)	boundary XXXXVII/XXXXXXIII	1000 to 1000 BC
ch: LBA III 96 (1000/1000 to 1000/1000 BC)	XXXXXXVI	Phase C21					Local Cycladic (after 1000 BC)	boundary XXXXVIII/XXXXXXIV	1000 to 1000 BC
ci: LBA III 97 (1000/1000 to 1000/1000 BC)	XXXXXXVII	Phase C22					Local Cycladic (after 1000 BC)	boundary XXXXIX/XXXXXXV	1000 to 1000 BC
cj: LBA III 98 (1000/1000 to 1000/1000 BC)	XXXXXXVIII	Phase C23					Local Cycladic (after 1000 BC)	boundary XXXXX/XXXXXXVI	1000 to 1000 BC
ck: LBA III 99 (1000/1000 to 1000/1000 BC)	XXXXXXIX	Phase C24					Local Cycladic (after 1000 BC)	boundary XXXXVI/XXXXXXVII	1000 to 1000 BC
cl: LBA III 100 (1000/1000 to 1000/1000 BC)	XXXXXXX	Phase C25					Local Cycladic (after 1000 BC)	boundary XXXXVII/XXXXXXVIII	1000 to 1000 BC

1) Stratigraphic phases
 2) "Base of sequence" (1000/1000 BC)
 3) "Base of sequence" (1000/1000 BC)
 4) "Base of sequence" (1000/1000 BC)

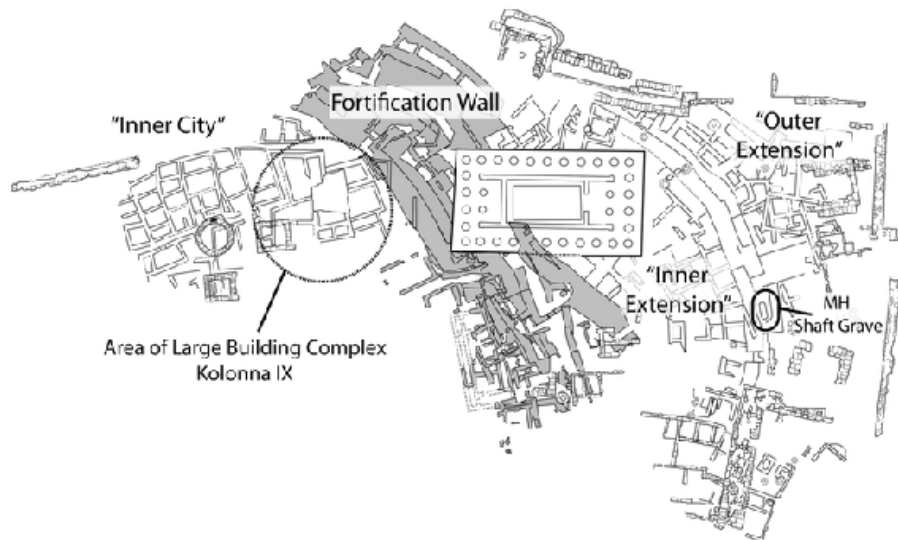
Notes:

(a) long absolute chronology for the Aegean Bronze Age based on the few presently published ¹⁴C dates;

(b) historical chronology based on the Egyptian Chronology and its relations to the Aegean;

(c) with subphases (A1, A2,

By contrast, Kolonna, almost uniquely in the southern mainland region, grew in prosperity and complexity through MH (circa 2000–1600), establishing relations beyond the Saronic with central and northern Greece (Maran 2007; Sarri 2007), the Cycladic Islands (Crego 2007; Gauß and Smetana 2008; Nikolakopoulou 2007; Overbeck 2007), the Argolid (Nordquist 1995: 44, 50–51; Philippa-Touchais 2007; Touchais 2007; Zerner 1978: 156–58, 1993: 48–50), and Minoan Crete (Gauß 2006; Gauß and Smetana 2007: 61–65; Hiller 1993). The prosperity of Kolonna's MBA inhabitants is evident in the material remains. By MH I, the community had expanded beyond the fortification wall to an “inner extension” or “inner suburb” that was then enclosed with a less imposing wall; still later, in early Mycenaean times, a further “outer extension” enlarged the urban area to almost the entire promontory (Fig. 7.4). Notable is the so-called Large Building Complex, founded early in MH just inside the massive fortification wall, and persisting until early Mycenaean times spanning several major architectural phases (Gauß and Smetana 2010). The footprint of the complex may have reached 680 square meters in the MBA, making it one of the largest known structures on the mainland; it has been interpreted as a mansion with a possible administrative function suggested by a clay stamp and a clay seal (Gauß and Smetana 2010: 172). The finds from the Large Building Complex include enormous amounts of pottery and faunal remains. The pottery of the complex's second architectural phase (Kolonna IX) comprises imports from the Cyclades and Minoan Crete, locally manufactured vessels of Minoan type, Aiginetan matt-painted (Siedentopf 1991), and solid painted. The imported and imitation Minoan pottery demonstrates not merely close exchange relations with Crete, but also the possibility that Minoan craftsmen (potters, at least) were resident on Aigina (Gauß 2006; Hiller 1993). The local vessels of Minoan type exhibit significant departures from Aiginetan potting traditions: they are wheelmade, they lack the omnipresent potters' marks found on contemporary Aiginetan vessels, and their forms are dominated by small, open shapes and cooking ware (Gauß and Smetana 2007: 63, 66). Other objects that testify to Minoan influence, if not presence, are an ashlar block with a Minoan-style double-axe mason's mark reused in a Late Roman context (Niemeier 1995: 78), a Minoan-type loomweight, fragments of three Minoan stone vases, a ceremonial stone hammer, Minoan jewelry, a stone *kernos*, and fragments of a potter's wheel (Hiller 1993: 199).



7.4 Site plan of Bronze Age Kolonna, Aigina. After Gauß and Smetana 2007: 58, fig. A.

Analysis of botanical, faunal, and human skeletal remains from the recent excavations at the Large Building Complex has revealed important information about how some inhabitants of Kolonna lived and died in the MBA (Forstenpointner et al. 2010; Galik et al. 2010; Kanz et al. 2010). The plant remains are dominated by the domesticated grain crops emmer wheat, bread wheat, and barley, with lentils as the main identifiable pulses. Grape, fig, and olive were also cultivated. The faunal assemblage consists of 3,178 terrestrial and 1,772 aquatic specimens. The terrestrial animals are overwhelmingly domesticated livestock, predominantly sheep/goat (66%), with lesser amounts of pig (20%) and cattle (14%). Only miniscule numbers of wild animal bones are present. This is a fairly standard faunal assemblage for the MBA and LBA, although the mix of domesticates varies and Gerhard Forstenpointner and colleagues note that the high percentage of sheep and goat is more characteristic of the Aegean Islands and Crete than the mainland, where cattle are more prominent. The remains suggest a mixed livestock economy in which both primary products (meat, hides) and secondary products (milk, hair, wool) were used, but a large percentage of animals were not slaughtered before four to five years of age. The inhabitants of the Large Building Complex also consumed fish, shellfish, and snails. Mollusks (bivalves and gastropods) make up 67% of the marine assemblage. Fish are perhaps underrepresented because of poor preservation of small bones, yet several species including dentex, pandora, sea bream, grouper, barracuda, and mullet indicate a mix of

near-shore and open-sea fishing. Remains of fins, ribs, and scales imply processing on site. Alfred Galik and colleagues also find closer parallels for the marine assemblage in Middle and Late Minoan Crete (e.g., Kommos) than in contemporary mainland sites. Taken together, these studies portray a varied and robust diet, but it must be remembered that the material comes only from the limited context of the Large Building Complex, an apparently elite setting where residents might be expected to have access to a better diet than others at Kolonna or in other settlements on the island.

The study of 48 subadult human skeletons recovered from intramural burials – chosen because Kolonna's adult cemeteries have not been located – produced results that support the impression of a generally prosperous community. The burials come from excavations of the last 20 years and range chronologically from EH I to LH (subphase not specified). Although these individuals died in utero (stillbirth), immediately or shortly after birth, or within the first year of life, there are few signs of malnutrition of the mother during pregnancy, or stress response in respiration, nutrition, or blood circulation after birth. Instead, death is more often attributed to perinatal failure: prematurity, congenital defects, acute diseases, and birth complications occurring at or immediately after birth (Kanz et al. 2010: 483–84). Stillbirth and death shortly after birth were surely common, unavoidable occurrences in the Bronze Age. A lingering question is whether meaningful trends can be extracted from a small sample spread over almost 2,000 years, but if it is accepted that the data fairly represent general trends in the health of Kolonna's population, a comparison with children at Lerna and Asine shows a much lower occurrence of malnutrition at Kolonna as measured by rates of dental hypoplasia and other indicators of metabolic problems.

The wealth and wide connections of Kolonna's inhabitants are suggested by the so-called Aigina Treasure. The mysterious history of this hoard, if that indeed is the right term for it, is well known (Higgins 1979), but recently new information has emerged, leading to a conference in which the historiography of the treasure was updated (Williams 2009) and the objects were reanalyzed stylistically and technically (Fitton 2009). The hoard is a spectacular collection of gold jewelry, comprising earrings, pendants, diadems, bracelets, necklaces, rings, and plaques, with lapis lazuli, amethyst, jasper, and rock crystal beads as secondary decorations (Fitton et al. 2009; Fig. 7.5). There is a basic consensus among scholars that the treasure probably did originate on Aigina in the MBA and should be viewed as a group that

may have been looted from a MH tomb.² Most accept that the pieces could have been made in an Aiginetan workshop, but not necessarily all in the same generation. The widest divergence of opinion concerns the identity of the craftspeople and the techniques and stylistic influences intrinsic to the individual pieces. Stefan Hiller (2009) supposes that Minoan artisans, part of a small but affluent colony residing on Aigina, created such jewelry mainly for their own community, at the same time as their fellow expatriates manufactured Minoan-style vessels. While Hiller's scenario assumes that most of the objects find their closest parallels in Minoan typology and iconography, other scholars favor comparanda from the Near East, Anatolia, Egypt, or the Greek mainland as inspirations for individual objects (various contributions to Fitton 2009; Koehl 2011). Perhaps the most useful statement one can make is that the Aigina Treasure underscores the unusual wealth and wide foreign connections that the community at Kolonna enjoyed in the MBA. The treasure seems to represent a synthesis of influences, perhaps filtered through Cretan connections and individuals.



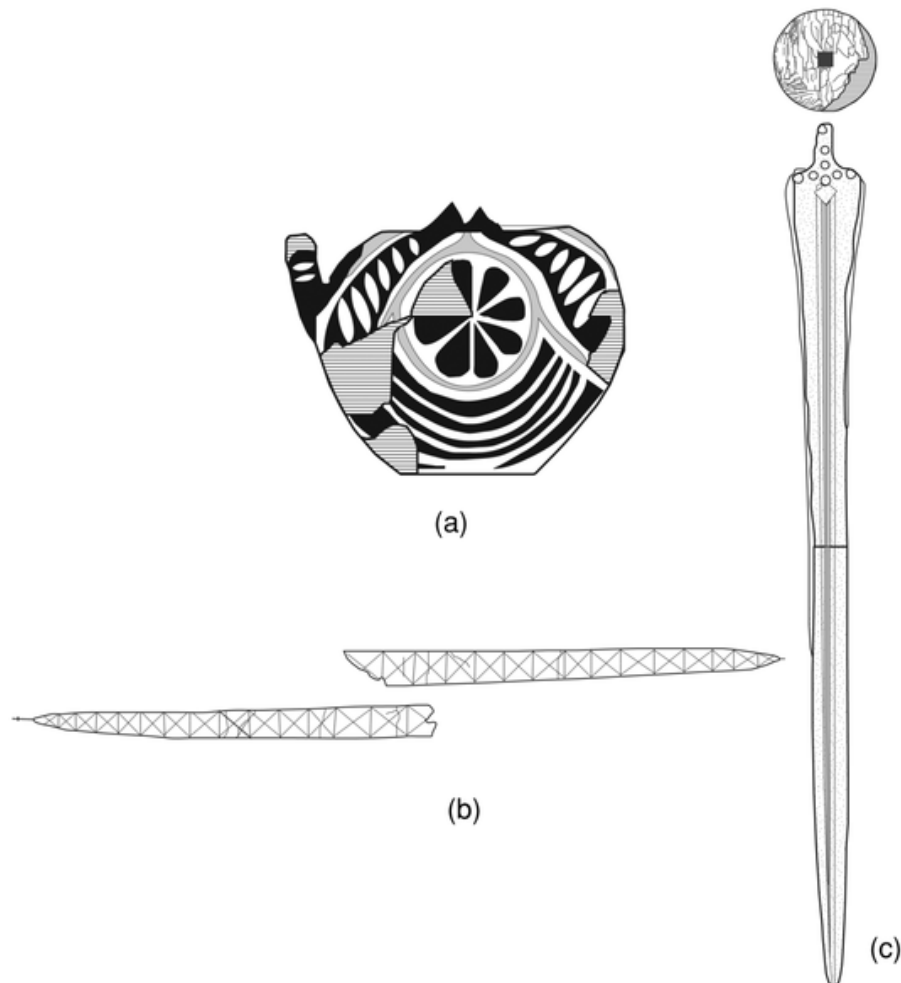
7.5 “Master of Animals” pendant from the Aigina Treasure. © Trustees of the British Museum.

The significance of the Aigina Treasure is highlighted by the more recent discoveries at Kolonna of an EH III hoard and a warrior's grave of MH II. The hoard, excavated in 2000 in House 19 of the "inner town," bears some similarities with the later Aigina Treasure in its content and wide geographical affinities. It consists of a number of gold pins with loop terminals, gold and silver bracelets, several gold and silver pendants with embossed and wire decoration, and one or more necklaces with beads of gold, silver, carnelian, faience, and rock crystal (Felten 2007: 15, 2009: 34–35). The traditions from which these pieces come include northeastern Aegean, Anatolian, Levantine, Mesopotamian, and Cretan. This hoard has several important implications. It implies that in EH III an elite group already existed that could assemble such a rich collection of precious jewelry, and thus the Aigina Treasure may be part of a much longer local tradition. Furthermore, since those who hid the jewelry lived in a period before the earliest Minoan objects appeared in MH I, they were apparently able to forge such far-flung connections without Cretan intermediaries.

The warrior's grave is conventionally known as the Middle Bronze Age Shaft Grave of Aigina, and it is explicitly offered as a forerunner of, and possible model for, the somewhat later shaft graves at Mycenae (Kilian-Dirlmeier 1997). Opinion is divided on whether it is a true shaft grave, however; according to Oliver Dickinson's (1977: 56) widely recognized definition, a shaft grave comprises a rectangular shaft cut into soft rock and earth, with built or rock-cut ledges some way down the shaft on which a roof of wooden beams would rest, creating a cavity for the burial chamber below it. The roof was covered with clay and the shaft above it was then filled with earth, stone, and sometimes offerings from a funerary meal. A tumulus might finally be raised above the grave. The Aigina grave does not entirely match this definition, in that the cut shaft is extremely shallow, with most of the grave built up of limestone rubble. There is no indisputable ledge, though Imma Kilian-Dirlmeier has plausibly detected a horizontal row of flat stones that could have served to hold in place a roof that does not survive (Kilian-Dirlmeier 1997: 17, fig. 4). Others have classified the burial as a "built tomb" or a "built cist" (Cavanagh and Mee 1998: 27; Hiller 1989: 138–39). The consequence of this debate is that it may not be possible to hold up the Aigina tomb as the model for the form of the later shaft graves at Mycenae, Lerna, and Ayios Stephanos; it must be pointed out, however, that the earliest shaft graves in Grave Circle B (MH IIIA–IIIB) at Mycenae do not display the fully developed, canonical form of the later (end of MH to LH IIA) examples (Graziadio 1988).

On the other hand, the prominent location and contents of the shaft graves at Aigina and Mycenae betray certain shared conceptions of the status and treatment of the deceased. Both were built in extraordinarily conspicuous locations just outside of the contemporary settlement's walls – in the case of the Aigina shaft grave, against the outer face of the enclosure wall of the inner extension during Kolonna IX. This may have been a unique honor; unlike those at Mycenae, the grave seems not to have been part of a cemetery, unless the latter was destroyed by construction during later periods. Kilian-Dirlmeier (1997: fig. 35) restores a 2-meter-thick tumulus over the shaft grave at Kolonna; the grave circles at Mycenae may have been covered by a low mound, separate mounds over individual graves, or no mound at all, but at both sites these reconstructions remain hypothetical (Mylonas 1966: 89–90).

The grave offerings at Kolonna are often thought of as a sampling, on a more modest scale, of the riches to come in Grave Circle A at Mycenae, but a better comparison is Grave Circle B, closer in date to the Kolonna shaft grave and less opulent in grave goods. The contents of the Kolonna burial include a bronze sword with a gold hilt and ivory pommel; several bronze daggers, including one with a decorated gold sheet molded around the handle; a bronze spear point; a gold diadem decorated with repoussé crosses; a gold knife with gold animal-head fittings; boar's tusk plaques from several helmets; six obsidian arrowheads; Minoan pottery of mature Kamares style dating to MM II; Middle Cycladic pottery from Melos and perhaps elsewhere in the Cyclades; and local matt-painted and plain vessels for drinking, eating, pouring, and storage (Kilian-Dirlmeier 1997; Fig. 7.6). It has been noted that the artisanship and decoration of the metal objects reflect mainland rather than Cretan traditions (Hiller 2009: 37), a claim supported by the similarity of motifs on the molded gold sheet to those on locally manufactured matt-painted pottery (Kilian-Dirlmeier 1997: 57). The pottery fits well with the assemblage of local and imported wares in Kolonna settlement IX, ceramic phase I, chronologically equivalent to MH II (Gauß and Smetana 2007: 63, 66) and roughly contemporary with the Aigina Treasure.³

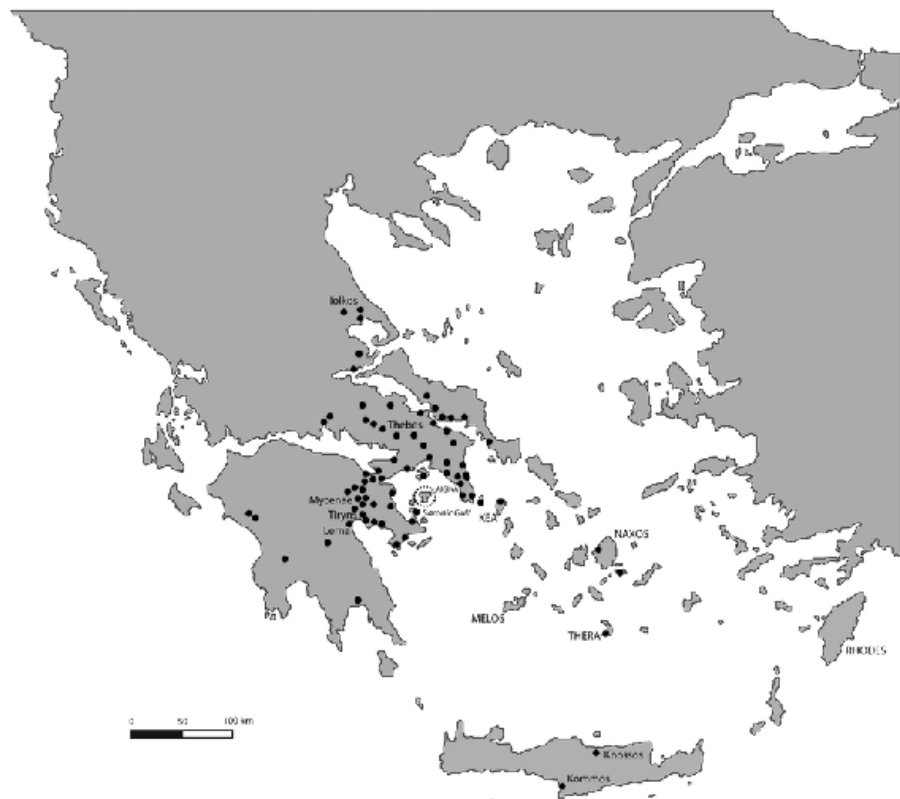


7.6 Examples of imported and high-status objects from the Aigina MH II “shaft grave.” (a) Kamares Ware vessel, imported from Crete, MM II; (b) gold diadem; (c) bronze sword with ivory pommel and gold fittings. After Kilian-Dirlmeier 1997: p. 28, fig. 27:16 (vessel); p. 19, fig. 6:9 (diadem); p. 18, fig. 5:1 (sword).

All of these artifact types are present in abundance in the shaft graves at Mycenae. Like many of the interments in Grave Circles A and B, the Kolonna shaft grave contains a warrior burial of a type that persists through the Mycenaean period and survives the collapse of the palaces (Deger-Jalkotzy 2006). That the elite individuals and families marked out by these shaft graves enjoyed preeminent status within the community is demonstrated by their setting and rich offerings, but it is specifically the warrior status of the individual buried at Kolonna that prefigures the striking (and decidedly un-Minoan) Mycenaean preoccupation with martial equipment and

iconography, as well as the possibly decisive role of violence in the emergence of the Mycenaean palace states (Acheson 1999; Bennet and Davis 1999; but cf. Wolpert 2004). The twin concerns with maritime and warlike pursuits (and perhaps even with naval warfare) are highlighted in a small number of MH Aiginetan matt-painted barrel jars decorated with ships and in one case a scene of armed warriors aboard a rowed ship (see Fig. 3.10; Rutter 2001: 128–30; Siedentopf 1991: fig. 4, pl. 38.162). There are very few Aiginetan pottery vessels deposited with the dead in Grave Circles A and B, undermining notions that Aigina had direct involvement in Mycenae's emergence to complexity. At the close of the MH period, however, Kolonna's long-standing relationship with Crete may have provided a conduit for Mycenae's initial contacts with the Minoan world. More likely than this is that Kolonna's massive fortification walls, paralleled in the contemporary Aegean only at Troy and Kea (Niemeier 1995: 75), and the precocious warrior burial, exerted a strong influence on an aspiring elite familiar with the prowess and the products of the island polity.

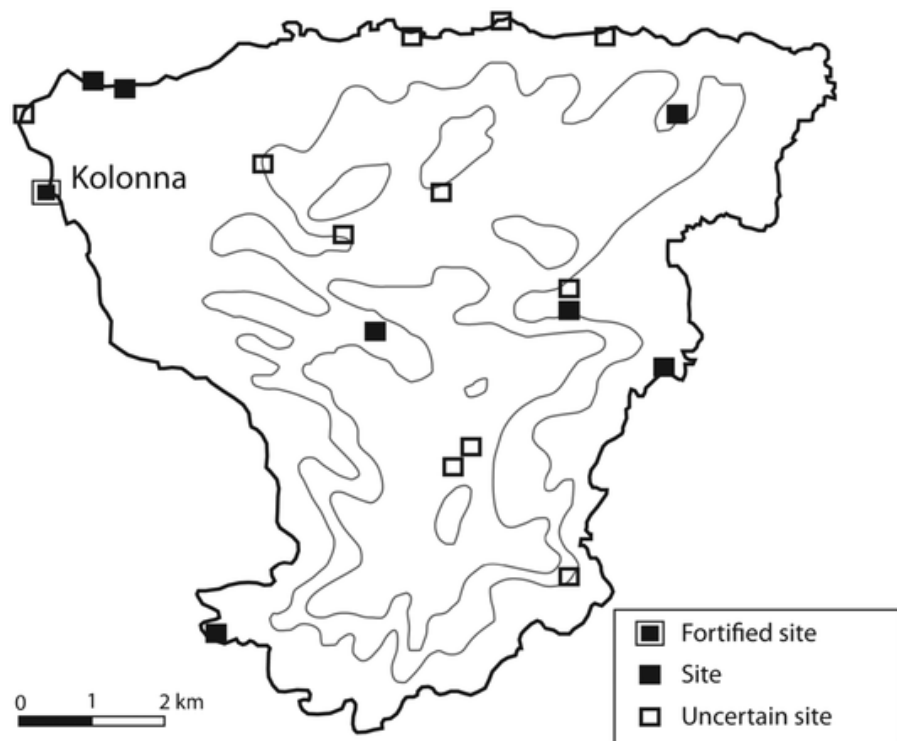
During the MH demographic free fall in Attica and the northeastern Peloponnese, the Aiginetans leapfrogged these areas to establish longer-distance trade relations with central Greece, the Cycladic Islands, and Crete. The impressive distribution of Aiginetan pottery plots the maritime routes over which the cargoes were moving, as well as overland routes by which fewer pots made their way to inland settlements (Fig. 7.7). Goods from Aigina may have been transferred across the Isthmus of Corinth to sites in central Greece along the Corinthian Gulf (e.g., Kirrha, Eutresis) through intermediaries living in the northern Corinthian plain. A number of sites in this intermediate zone, including Korakou, Gonia, Peridkaria, Aetopetra, Arapiza, and Ayios Gerasimos, seem to have been occupied from EH III through the Mycenaean period (Lambropoulou 1991: 144). They seem to have coexisted in a stable, heterarchical settlement pattern over much of the Bronze Age (Pullen and Tartaron 2007: 148, 150–52). During MH, their only detectable external contacts were with Aigina, indicated by the presence of matt-painted, red-slipped and burnished, and coarse plain and cooking vessels in Aiginetan gold-mica fabric. At Gonia, these types constitute 19% of the total ceramic assemblage; at Korakou the figure is 9% (Lambropoulou 1991: 145).



7.7 Distribution of Aiginetan "gold mica" pottery exports. After Rutter 2001: 127, fig. 12, with additions.

Because there has never been a systematic site survey on Aigina, the handful of known MH sites have been discovered as the result of informal explorations or as chance finds. In the mid-1990s, the MH catalogue consisted of eight confirmed sites and eleven uncertain sites (Fig. 7.8). These sites are mainly sherd scatters or occasionally graves, but beyond Kolonna architecture is lacking. It is at present impossible to know if this pattern is a fair representation of reality, and we are not in a position to answer Wright's (2010: 808) query concerning whether there were centers on the island apart from Kolonna serving as magnets for small villages and hamlets. Very small amounts of MBA material have been recovered in excavations at Lazarides, an elevated site in east-central Aigina with views over most of the Saronic (Sgouritsa 2010), and at the location of the later temple of Aphaia in the northeastern corner of the island (Pilafides-Williams 1998: 82–83, 156). These and other sporadic finds are not suggestive of alternative centers, or of a complex hierarchy of sites below Kolonna. There is a comparable dearth of MH I–II sites around the Saronic, but an important exception is the recent discovery at Megali Magoula near

Galatas, across from Poros, of a small but impressive settlement enclosed by an elliptical fortification wall (Konsolaki-Yiannopoulou 2003a, 2010). The MH pottery is a mixture of Peloponnesian and Aiginetan types with a chronological concentration in MH II. Alongside mainland gray Minyan and Argive Minyan, much of the fine to semi-fine matt-painted pottery is Aiginetan, including large and small basins and a few examples of cylindrical pyxides and barrel jars. Megali Magoula prospered along with Kolonna IX and X, perhaps in part by serving as intermediary for Aiginetan products with trade partners in places like Lerna and Asine (Konsolaki-Yiannopoulou 2010: 73).



7.8 Map of Aigina showing the locations of known MH sites. After Kilian-Dirlmeier 1997: 109, fig. 62.

At the end of the MBA, Kolonna X (MH III–early LH) witnessed a further expansion of the town to the east, enclosed by yet another wall in early LH, this time of large rubble construction reminiscent of cyclopean masonry. The ceramic evidence suggests that the outward focus that the Aiginetans had maintained on more distant trading partners during the Middle Helladic hiatus shifted back to the regions surrounding the Saronic Gulf, where two related transformations were taking place starting in MH III/LH I: the “colonization” of the interior

of the northeastern Peloponnese, which saw resurgent populations establishing new sites or reoccupying old ones that had been effectively abandoned since the late third millennium (Rutter 2007: 42–43); and the social, political, and economic developments of the Shaft Grave Era, most prominently the emergence of complexity at Mycenae. The Aiginetan ceramic industry responded to the increased demand for household pottery closer to home by expanding production in a range of standardized and specialized forms: larger closed and open vessels including water jars, barrel jars, and kraters; smaller drinking and eating vessels such as goblets, *kantharoi*, and handleless bowls; and four types of cooking pots (Rutter 2007: 36). A pottery kiln dating to the early years of LH that was recently excavated in the southwestern part of the Large Building Complex may have played a role in the increased production. The Saronic small world centered on Aigina was thus revived, starting in MH III and peaking in LH I–II. This was the era of the greatest cohesion of the Kolonna-centered Saronic world, and for most sites in the Saronic and northeastern Peloponnese, the time of greatest abundance of Aiginetan imports (Lindblom 2001: 41–42).

Mycenae was not yet connected in any meaningful way to this network, but soon would be. Before we turn to the expansion of Mycenae, it is worth reflecting on why Kolonna had become such a monumental settlement with such broad contacts, and why the pottery produced on the island was one of few Aegean products to be so widely disseminated. It was partly a matter of Aigina's fortunate geographical position, and the opportunities for efficient transport by sea. It had also to do with the excellent sources of clay and temper to which potters at Kolonna had access. Moreover, Kolonna filled a power vacuum, surviving and flourishing while communities all around disintegrated, by forging new ties with more distant partners. A distinct distribution pattern had developed by the late MH for two main ceramic production and export industries: Aiginetan; and lustrous decorated wares centered in the southern Peloponnese or Kythera (Zerner 1993). In the southern Peloponnese, there is much lustrous decorated and little Aiginetan; in central Greece and Attica, the situation is reversed; and in the northeastern Peloponnese, there is much of both (Rutter 2007: 36).

Many scholars have focused on the intrinsic properties of the Aiginetan pottery itself relative to local and imported alternatives (e.g., Zerner 1993). The Aiginetan product was more standardized in its form, the result of consistent forming and firing practices,

including levigation, uniform clay composition, and controlled firing conditions (Philippa-Touchais 2007: 110), lending the impression of greater reliability. Its well-executed and attractive matt-painted decoration was appreciated for its aesthetic properties, inspiring local imitation. There is also strong evidence of superior performance for the pots' intended uses (Rutter 2007: 42). The cooking ware was lighter in weight but better made and more durable than the norm; the porosity of the fabric inhibited cracking during expansion and contraction cycles, while the volcanic rock temper apparently possessed favorable thermal expansion characteristics. The result was higher thermal shock resistance and fewer failures under thermal stress. The several forms of water jug (*stamnoi*, *hydrias*, amphoras, and large jugs) were larger, lighter, with thinner walls, thus more practical for transporting water, and their porosity promoted evaporation of moisture through the body wall and into the atmosphere, keeping the liquids they contained cooler.

While the performance characteristics of Aiginetan pottery have long been acknowledged, in recent years scholars have attributed to the trade in Aiginetan pottery far more profound influences. Anna Philippa-Touchais (2007: 110–12) asserts that the aesthetic of Aiginetan MBA pottery not only inspired imitations at Argos and elsewhere, but actually created a network of “common references,” a kind of *koiné* of instantly recognizable shapes, fabrics, and technical excellence that attained an ideological value for local elites wishing to display their connections with an external world in the context of communal feasting.

This sentiment is echoed in studies of Aiginetan ceramics in Thessaly and Boeotia, and at Lerna. Despite the fact that imported Aiginetan vessels are quite rare in Thessaly, Joseph Maran (2007) believes that “Magnesia polychrome,” manufactured in or around Pefkakia beginning in MH II, emulates the shapes and decoration of Aiginetan matt-painted pottery. According to Maran, the adoption of these novel table and cooking vessels actually transformed methods of food preparation and consumption. These new practices became strategies in communal eating and drinking ceremonies to emphasize the connection of those who possessed them to elite practices in distant southern Greece. As at Argos, aspiring elites sought to differentiate themselves in society through the use of such exotic objects. Maran sees the spread of this influence, which began with exposure to a limited number of genuine Aiginetan specimens, to the northern Aegean and the Izmir region (Maran 2007: 174). In Boeotia,

the aesthetics of Aiginetan pottery had a strong effect by MH II, as potters began to combine Minyan and matt-painted styles. This interaction can be traced through a succession of changes from yellow and red Minyan matt-painted, to polychrome mainland in MH III, and ultimately to Mycenaean style (Sarri 2007: 163). At Lerna, a massive collection of broken pottery and animal bones in the fill of two shaft graves of LH I, representing funerary meals that must have involved hundreds or even thousands of participants, contains Aiginetan pottery in the amount of more than 50% of between 15,000 and 18,000 sherds (Lindblom 2007). In such an obviously communal and symbolically charged event, vessels manufactured at Kolonna, an impressively fortified place possessing a maritime fleet and advanced technological knowledge, could serve as a powerful demonstration that the followers of the deceased had access to a network of social relations beyond the reach of most members of the communities on the Argive Plain (Lindblom 2007: 126). It may have been especially important to display wealth and esoteric knowledge if one purpose of the ceremony was to transfer rights and privileges to an heir of the deceased under potentially contentious circumstances. We might imagine that the Lerna shaft grave deposit represents the kind of competitively charged communal event that Philippa-Touchais and Maran have in mind for Argos and Pefkakia. The social ramifications implicit in the acquisition and use of Aiginetan wares thus extend well beyond the economic value of the pots or the exchange networks that moved them.

An even more direct influence may have been at work in Aigina's relationship with the settlement at Ayia Irini on the island of Kea (Crego 2007, 2010; Overbeck 2007; Overbeck and Crego 2008), just outside the Saronic Gulf. Ayia Irini IVa was founded in a developed phase of Middle Cycladic after a hiatus spanning the end of Early Cycladic (Ayia Irini III) and the earliest part of the Middle Cycladic. The settlement was apparently colonized from outside, with an intrusive ceramic repertoire including a system of potters' marks; immediate engagement in vigorous trade with the mainland, the Cyclades, and Crete; and an impressive fortification wall. Donna May Crego (2010: 843) points out that there is little evidence for traditional women's crafts, and burials of the period are not yet known, suggesting to her the initial settlement of Ayia Irini IVa by a male, commercially oriented installation rather than a typical village. As for the origin of the settlers, in an earlier article John Overbeck and Crego (2008: 305) pointed to central Greece, perhaps Boeotia, on the strength of the abundance of mainland pottery types such as gray Minyan. More recently, in something of a reassessment, Crego (2010)

relocates the settlers to Aigina, highlighting shared elements that add up to a special relationship between the two islands. She sees links to Kolonna in the fortification wall and the system of potters' marks. More salient still are indications of close relations in the ceramic assemblages (Crego 2010: 842–45). Although true Aiginetan matt-painted pottery makes up only around 3% of the pottery corpus of phase IVa at Kea, locally produced yellow-slipped (12%) appears to be an emulation of Aiginetan matt-painted adapted to local clays. Further, the two settlements exchanged vessel types rarely found outside their local contexts: at Kolonna the old and new excavations, as well as the shaft grave, have yielded a range of Keian vessels, including the rare white-on-gray, found in numbers matching those known on Kea itself. In parallel, potters at Ayia Irini manufactured barrel jars and bulbous jars in yellow-slipped fabrics, imitating the shape and appearance of Aiginetan matt-painted prototypes. The latter shape is rare outside Aigina. Crego concludes that Ayia Irini IVa was founded from Kolonna as a trade station to distribute Aiginetan products and to provide access to the metal deposits at nearby Lavrion on the Attic mainland. The wide contacts of the new settlement can be explained by Kolonna's existing maritime network of ties to the mainland, Cyclades, and Crete. In the subsequent phase IVb, commercial interests continued, but the far greater occurrence of burials and women's equipment suggests a fully formed village and an incipient Kean identity separate from Aigina. The dominant influence of Aigina had declined by the late MBA (phase V), when Minoan pottery was imported and imitated, Minoan architectural styles were adopted, and Linear A script was used (Davis 2008: 195). By the following phase VI, corresponding to the beginning of the LBA, Minoan influence was pervasive in every aspect of material culture. If Crego's interpretation of Ayia Irini IVa is accepted (and there are certainly alternative explanations of the evidence; e.g., Davis 2008: 194–96), it shows Kolonna in an expansive mode, extending its small world beyond the confines of the Saronic Gulf.

Aigina's unusual success in production and export, amounting to the better part of a millennium of competitive advantage, might be further illuminated if we think in terms of connectivity. Recalling the discussion of social network theory in the previous chapter, we can suggest that the principle of preferential attachment (Barabási and Albert 1999), by which new vertices attach disproportionately to sites that are already well connected, applies forcefully to Kolonna's situation in the MBA and early LBA. Kolonna was a peer of several highly developed EH II communities in the northeastern Peloponnese and Cycladic islands, but unlike most others survived the EH III

decline as a prosperous community, filling a yawning power vacuum. Although the growth of the Aiginetan potting industry was perhaps stimulated by contact with protopalatial Crete, this cannot explain the initiation of exchange relations with the Cyclades, the Peloponnese, and central Greece, for which the role of intrepid and enterprising individuals must have been decisive. By means of this precocious outreach, Kolonna became more “connected” than any other settlement in the region. As demographic recovery proceeded and new settlements were established in MH III–LH I, a period of continuous growth began with the addition of new vertices and new paths between them, but the huge competitive advantage held by Aiginetan producers in terms of experience, efficiency, and established connections meant that these new nodes connected to Aigina preferentially, in agreement with the ceramic evidence from the Saronic and surrounding areas. Under conditions of continuous growth and preferential attachment, a node that acquires more connections than others will accumulate them at an increasing rate, causing the difference in connectivity to multiply as the network grows (Barabási and Albert 1999: 511). I suggested in [Chapter 6](#) that this dynamic might illuminate the emergence of Mycenae during the Shaft Grave Era or the dominant position of Knossos in the neopalatial period, but we can now apply the same idea to Kolonna's long-term prominence from EH III to LH II. This process, the impetus for which may have originally been economic, was a key factor leading to a situation where the emergence of rival centers of *political* power is suppressed, as argued by Pullen and Tartaron (2007) for Kolonna's relationship with the Saronic region and beyond. A consideration of connectivity within the framework of network theory augments the interpretations of the ceramic evidence, outlined above, to begin to answer Wright's (2010: 808) question: “How do we assess the regional influence or connectedness of Aegina beyond [the Saronic Gulf] area?”

Kolonna and Mycenae in the Late Bronze Age

The expansion of Mycenae's economic and political interests was destined to transform the Saronic Gulf entirely, but this was more a gradual process than the execution of a strategic plan at any one point in time. A brief survey of the evidence of pottery in regions to the north and east of Mycenae is enlightening on this point.⁴ The areas of the southeastern Corinthia north of Mycenae, such as the Nemea and Longopotamos Valleys, have been considered natural targets for Mycenae to expand into virtually empty landscapes in the early years of the Shaft Grave Era in MH III–LH I (Cherry and Davis 2001). But

the ceramic evidence suggests otherwise, indicating a strong measure of independence in the early Mycenaean period (Morgan 1999: 358–61; Mountjoy 1999: 197; Rutter 1989, 1990, 1993; Wright 2004: 124–26). Jeremy Rutter (1990: 452–55) has observed that the pottery used by the first group to resettle Tsoungiza finds close parallels not in the Argolid but in late MH graves in the North Cemetery at Corinth. The MH III assemblage is parochial, with a few imports from Aigina, but only general stylistic links with the Argolid and the Corinthia (Morgan 1999: 360). In LH I, Mycenaean-style fineware is rare while imported Aiginetan gold-mica storage, cooking, and mixing vessels comprise between 7% and 10% of the total pottery assemblage (Rutter 1989: 12; Lindblom 2001: 41), with smaller numbers of Cycladic and Cretan pots possibly obtained through Aiginetan intermediaries. Tsoungiza may have looked not south to Mycenae, but west toward the thriving center at Aidonia at this time (Wright 2004: 125). It is not until LH IIA that a significant connection can be demonstrated with Mycenae. Although imports of Aiginetan utilitarian vessels held steady at approximately the same levels as in LH I (Rutter 1993: 82–85, table 1), trench EU 10 produced high-quality Mycenaean fineware, including a Vapheio cup and four piriform jars so similar to examples from Mycenae that they may have come from the same workshop (Mountjoy 1999: 199; Rutter 1993: 74–75, 79). By this time, then, Tsoungiza was being drawn into Mycenae's orbit, although we cannot say with certainty that Tsoungiza had been incorporated politically as opposed to simply participating in economic transactions with an emerging center of pottery production and trade at Mycenae (Rutter 1993: 91). Indeed, in LH IIB both Mycenaean and Aiginetan imports actually declined and the LH IIIA1 subphase is not well known (Mountjoy 1999: 200).

The more distant northern Corinthia was slow to adopt the Mycenaean style. At LH I Korakou, there are a few sherds only of LH I style, and a small number in the palatial and pseudo-Minoan styles of LH IIA (Davis 1979). Instead the main connection in the early Mycenaean period was with Aiginetan trade networks. As mentioned above, this relationship began in the MBA, but by LH I the inhabitants of Korakou were importing a range of Aiginetan cookware, kraters, and large storage and pouring vessels (Davis 1979: 241, 258–59; Lindblom 2001: 41; Morgan 1999: 351; Mountjoy 1999: 199–200). MH traditions persisted longer in the northern Corinthia than in the Argolid: in the East Alley, gray Minyan, matt-painted, and yellow Minyan wares were found together with sherds of Mycenaean LH I and LH II styles (Davis 1979: 256–57).

Mycenaean LH I style is also rare at Kolonna and at the circum-Saronic settlements that imported pottery primarily from Aigina throughout the MBA and early Mycenaean period (Lindblom 2001: 43, table 9; Siennicka 2002: 181–84). Relatively few sites with good early Mycenaean deposits have been published, and these have produced few examples of Mycenaean LH I. In Attica, it is exceedingly rare; Kiapha Thiti has few sherds if any at all (Maran 1993: 205; Mountjoy 1999: 491–92). Megali Magoula (Galatas) has produced some sherds of Mycenaean painted LH I style from the mounds of earth covering two early tholos tombs; this material seems earlier than the tombs themselves, reflecting settlement pottery rather than grave goods (Konsolaki-Yiannopoulou 2010: 73). If Megali Magoula flourished in MH because of access to the Aiginetan economy, the tholos tombs appear to indicate a later prosperity tied to relations with the Argolid and beyond.

Commenting on exchange systems in LH I, Mountjoy (1999: 20, 492) finds it surprising that lustrous decorated and other early Mycenaean styles should be so rare in the Saronic and the Corinthia, despite the easy voyage from the Gulf of Argos, where they are found in abundance. She notes that the shapes in which Aiginetan workshops specialized, including hydrias, amphoras, and kraters, do not duplicate the fine tableware of LH I style, so redundancy is not an explanation. She speculates that Aiginetan activity might account for the lack of pottery decorated in the LH I style, and that Lerna and Kolonna may have had separate interaction spheres. This seems correct, but I would go further to suggest exclusionary practices – a deliberate strategy of protectionism reflecting not only economic hegemony but also a final phase of Aiginetan political muscle.

LH II marks a transition when Mycenaean pottery of palatial and pseudo-Minoan type found its place at Aigina, Kiapha Thiti, and Athens by LH IIA. Both of these classes were produced locally at Kolonna and Athens (Mountjoy 1999: 492). Among the pseudo-Minoan types, the marine style is found at Kolonna, Athens, Thorikos, and Eleusis. But in that same period Aiginetan imports still made up 7–10% of the corpus at Tsoungiza and 20% at Kiapha Thiti (Maran 1992: 204–211). Mycenaean LH IIB pottery is still relatively little known in Attica, except for some graves at the Athenian Agora, until masses of later LH IIB pottery were dumped into wells on the south slope of the Athenian acropolis (Mountjoy 1999: 492–93). Also included in these deposits is late matt-painted ware, possibly an Aiginetan product.

The appearance of Mycenaean pottery for the first time in substantial quantities marks the initiation of a shift, played out over a period of maybe 50 to 100 years and essentially accomplished in LH IIIA – the early Mycenaean palatial period in the fourteenth century – by which Mycenae swallowed the Saronic Gulf into its economic and political orbit. It is no coincidence that Kolonna's export industry seems to have gone into decline sometime during LH IIIA1, around the time of the establishment of the first verifiable palace at Mycenae (Lindblom 2001: 129–30). The chronological period represented by LH IIIA1 is barely detectable at Kolonna, and few LH IIIA2 deposits in the Aegean have produced Aiginetan imports (Lindblom 2001: 129). By that time, Mycenaean fineware and utilitarian vessels had superseded most Aiginetan shapes throughout Kolonna's former sphere of influence. (Nevertheless, exports of Aiginetan storage and cooking vessels continued in LH IIIB and IIIC, owing to their superior working qualities as well as the momentum of long-term relationships by which they were exchanged [Lindblom 2001: 41; Zerner 1993: 55].) It is reasonable to assume that this shift in production and consumption patterns reflects the appropriation of the export market by Mycenaean from the Argolid, but there are also clear signs of political expansion of Mycenae during the palatial period into the southwestern Corinthia and the Saronic Gulf, though probably not the northern Corinthia.

At Tsoungiza in the southwestern Corinthia, a ceremonial feasting deposit of LH IIIA2 (trench EU 9) consisting of cattle bones; drinking, serving, and cooking vessels; and a fragmentary ceramic female figure has been interpreted as the remains of a regional feast intended to cement alliances between elites at Mycenae and Tsoungiza (Dabney et al. 2004). The analysis of a pit with contents dating to LH IIIB1 shows that residents of tiny Tsoungiza had access to the same range and quality of pottery as Mycenae, indicating a close link but not necessarily strict control (Thomas 2005; this may already have been true in LH IIA: Rutter 1993: 90). Patrick Thomas also reinterpreted the so-called potters' shop in House B at Zygouries as a workshop for the manufacture of perfumed olive oil, implying a close link with Mycenae's interests in LH IIIB (Thomas 1992). In the broader sweep of the Mycenaean era, the southwestern Corinthia was only gradually incorporated into the political economy of the Argolid. Wright (2004: 127) has associated the Nemea Valley with a "periphery model," in which such regions exhibit considerable autonomy, participating in alternative social and economic networks before being incorporated into palatial economies to varying degrees in LH III.

A different pattern prevails in the northern Corinthia. There, the numbers of Aiginetan as well as other imported vessels declined in LH IIIA2. During the palatial period, Corinthian fineware shows strong stylistic connections with the Argolid in both forms and decorative motifs, but virtually all pottery vessels and terracotta figurines are believed to have been made locally (Morgan 1999: 353). The absence of true imports from the Argolid makes it highly unlikely that Mycenae dominated the northern Corinthia politically or established a permanent presence there (Pullen and Tartaron 2007; Tartaron 2010).

In the Saronic Gulf, the process of Mycenaean expansion into the region is not easily appreciated because few contexts spanning early to later Mycenaean are available, and in general the early Mycenaean remains are inferior in quantity and quality to those of the later Mycenaean phases (Siennicka 2002). Ongoing investigations at the MH-LH settlement of Megali Magoula offer a window onto the process by which Mycenaean influences insinuated themselves into the Saronic Gulf region (Konsolaki-Yiannopoulou 2003a, 2010). Located in the southwestern corner of the Gulf, with manageable overland and maritime access to the Argive Plain and the Argolic Gulf, Megali Magoula was well positioned to be an intermediate link between the two bodies of water. As we have seen, a prosperous community of the MBA had strong ties to Aigina, and MH III-LH I sherds found in the fill of the somewhat later tholos tombs show continuity into the LBA. Of the three tholoi, Tomb 3 seems to be earliest, dating perhaps to LH I based on pottery and weapons tenuously associated with the burial(s). The form of the tomb, built entirely above ground with a circular chamber and no dromos, recalls the EM-MM tholoi of southern Crete; Eleni Konsolaki-Yiannopoulou (2010: 72–73) proposes that it may represent, along with the Vagenas tomb in Messenia, a link between Cretan tombs and Helladic tholoi – though of course there is nothing approaching a consensus about the origin of the Helladic tholos (Rutter 2001: 139; Voutsaki 1998: 42–43). If such a connection existed, it might have been part of the cultural expansion of Minoan Crete that affected Ayia Irini at the dawn of the LBA.

Tombs 1 and 2 are more recognizably Mycenaean tholoi, the architectural features and pottery of which indicate a date in LH IIB for their construction and earliest burials. They are quite different in form. Tomb 1 is a very large tholos ($D = 11.8$ meters) of Pelon's Class C built mainly above ground with an artificial tumulus heaped over it (Konsolaki-Yiannopoulou 2003a: 165–75). Elements of the tomb's construction find parallels in early tholos tombs in Attica, Messenia,

and the northeastern Peloponnese. The Mycenaean pottery, while not found in undisturbed burial contexts, indicates that the tholos was in use from LH IIB to LH IIIB. Tomb 2 is a very small example ($D = 3.8$ meters) of Pelon's Class A, rare in the northeastern Peloponnese but common in Messenia, where Minoan influences were strongly felt (Nelson 2001; Pelon 1998). A construction date in LH IIB is also favored, with continuing use in LH III and a concentration of Mycenaean pottery in LH IIIA2–IIIB1 (Konsolaki-Yiannopoulou 2003a: 177–78). Initial use of these tombs in LH II coincides with the first wave of Mycenaean pottery in the Saronic, and we might imagine elites at Megali Magoula now taking their cues from the families burying their dead in early tholoi in Messenia and the Argolid, keeping in mind that the fertilization of Mycenaean culture from Crete was still ongoing. As Kolonna lost its preeminent position in the Saronic in LH IIIA, the wider area of Mycenaean Troizen around Megali Magoula flourished, indicated for example by the rich chamber tomb cemetery at nearby Apatheia, where evidence for libations as part of elaborate funerary rituals parallels similar traces in the Megali Magoula tholoi (Konsolaki-Yiannopoulou 2001). Following Konsolaki-Yiannopoulou's (2010: 73) suggestion that “[t]he fall of Aegina and the rise of Mycenaean Troezen are two parallel phenomena, which may not be disconnected...,” it is reasonable to perceive in these changing fortunes the moment at which Mycenaean presence in the Saronic began to have political, not just economic or cultural, ramifications.

The archaeological record shows unambiguously what a momentous shift this was (Figs. 7.9, 7.10). The number of known sites around the Saronic increases almost twofold in late Mycenaean times when corrected for phase durations, and numerous new settlements indicate a dynamic expansion (Siennicka 2002: 184–89). Some sites that had long been occupied continued to flourish; for example, in Attica, Eleusis and Ayios Kosmas experienced prosperity and expansion, and the long-established settlements of the northern Corinthian plain carried on as before. But many more of the settlements were new foundations of the palatial period, as Figure 7.10 clearly shows. With some variations, they adopted the typical repertoire of Mycenaean material culture, including pottery forms and styles, architectural techniques, burial customs, and cult practices; in short, they participated in the Mycenaean cultural *koiné* that formed rapidly in LH IIIA and remained in place until it began to fragment in later LH IIIB. To give a sense of the range of palatial-period communities in the

Saronic Gulf region, I will next describe briefly two settlements, Kanakia on Salamis Island and Ayios Konstantinos on the Methana peninsula, before taking up a third, Korphos-Kalamianos, at much greater length. (For a more inclusive survey of LH IIIA–IIIB Saronic settlements, see Siennicka [2002](#): 184–89.)

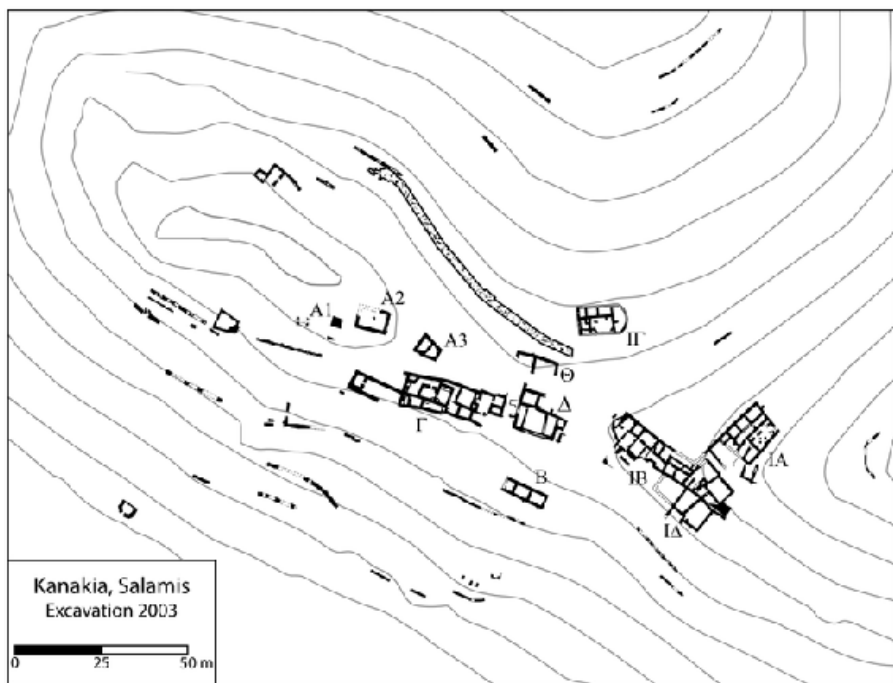


7.9 Map of early Mycenaean sites in the Saronic region. After Siennicka [2002](#): 180, fig. 1.

Kanakia was an acropolis-type settlement of LH IIIA–IIIC date in the southwestern corner of Salamis, built on a series of terraces with retaining walls on and around a pair of neighboring peaks (Lolos [2007](#)). The site overlooks two harbors, with a broad viewshed encompassing much of the Saronic Gulf. The built area covers approximately 4.5 hectares, with structures varying in size and plan separated by roads and courtyards ([Fig. 7.11](#)). Free-standing structures with one, two, and three rooms have been identified, along with true megara, trapezoidal buildings, and corridor-type buildings such as are known in LH IIIB contexts at Mycenae, Tiryns, and elsewhere. There are also at least two complexes of multiple, attached buildings on the upper areas of the acropolis. The site is unfortified, but the approaches are steep and a system of watch towers seems to have been in place.



7.10 Map of late Mycenaean sites in the Saronic region. After Siennicka 2002: 180, fig. 2.



7.11 General plan of Mycenaean Kanakia, Salamis. After Lolos 2007: 238, fig. 4.

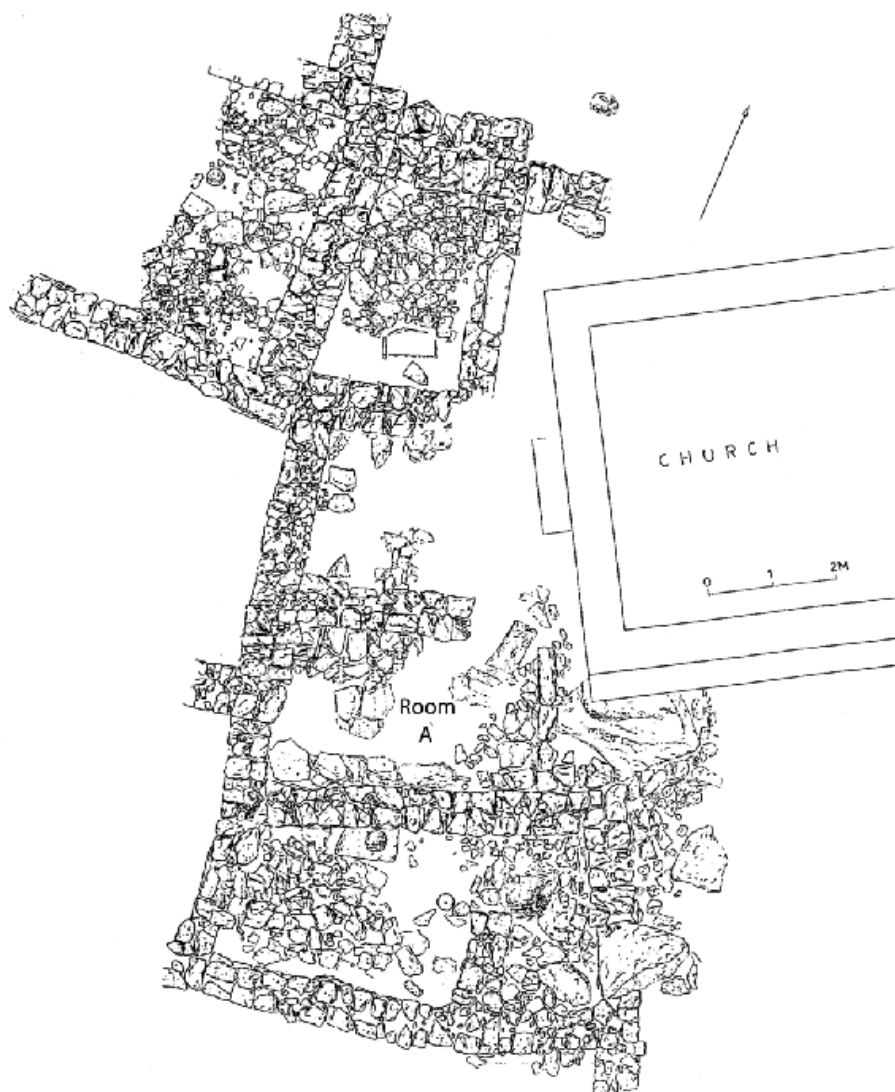
Excavations since 2000 have focused on structures within the

building complexes of LH IIIB–IIIC date. The structures often rested on multiple levels conforming to the terraced topography; an example is building IA, a LH IIIB corridor house built on two levels with an upper level devoted to working areas where stone tools, pottery, and traces of mineral pigments were found, and a lower-level cellar where pottery vessels were stored. Building IA forms part of a larger industrial complex with buildings IB and IΔ; this compound comprises more than forty rooms and spaces for workshops, storerooms, auxiliary rooms, corridors, courtyards, and paths. The finds of querns, grinders, whetstones, spindle whorls, beads, a hoard of bronze tools in IΔ, and everyday pottery of LH IIIB2–LH IIIC Early are consistent with this interpretation. Some evidence of cult has been found in a couple of buildings, in the form of a number of clay anthropomorphic and animal figurines, the former mainly of phi and psi type, but these attest to ritual practice in household or workshop contexts only. Overall, the settlement as revealed to date reflects a working community; as yet no building of truly palatial character has been uncovered. Yet the size of the settlement, the quality of the architecture, and the presence of imported goods suggest that this was an important settlement. Architectural details such as columned entrances (*propylaia*), a large “double megaron” (building Γ, considered by the excavator to be a ruler's residence: Lolos 2007: 235), and a unique, massive tower-like structure attached to a twin gate that controls access to a triangular space all point to a community of some wealth and power. Pottery was imported from the Argolid, Attica, and Aigina – in the last case the cooking pots, some with potters' marks, which were still circulating in palatial times. In the industrial area of IB, a large fragment of a Cypriot copper oxhide ingot was found, and also of Cypriot origin or inspiration, a piece of a ceramic wall bracket from building IΔ of a type known from Tiryns, and from the same context a coarseware stirrup jar marked in a Cypriot fashion.

Kanakia is best interpreted as the seat of a local ruler well connected to Mycenaean political and economic networks; with probably fine harbors, it must have been a destination for maritime traffic in the Saronic Gulf. Salamis was a busy place in LH IIIA–IIIB, with a large number of settlements and cemeteries that have not been adequately investigated (Anastasiou-Alexopoulou 2003). In the early twelfth century, Salamis was apparently a destination for refugees of the palatial collapse and Kanakia may have been one of several sites on the island to receive them until circa 1150, when it was finally abandoned.

Ayios Konstantinos is a small village of the Mycenaean palatial period, situated on a high ridge overlooking the southeastern coast of the Methana peninsula. Unlike Kanakia, the settlement had no easy access to the sea, and so probably supported an agropastoral community exploiting terrestrial resources and routes. Yet among its humble buildings it housed a remarkable sanctuary, important for numerous reasons: its inconspicuous position within a simple village; the in situ condition of the remains, which permits chronology and ritual performance to be reconstituted; and the distinctiveness of the cult objects, which show local variability that cannot be characterized as a chronological effect (Hamilakis 2003; Hamilakis and Konsolaki 2004; Konsolaki-Yiannopoulou 1999, 2001, 2002, 2003b). The cult centered on the small Room A (4.3 × 2.6 meters), whose furnishings consisted of a floor of mixed earth and pebbles, a stepped bench in the northwest corner opposite the entrance, a low platform along the south wall, a podium in the center of the room, and a hearth in the southeast corner (Fig. 7.12). The finds date the use of the room to LH IIIA–LH IIIB. On and around the bench, excavators found more than 150 terracotta figurines, tripod altar tables, pottery, and a triton shell similar to those found in Minoan shrines. The corpus of figurines is unusual in that it consists mainly of bovids (cattle and oxen) and horses, with several rare groups including horses with helmeted riders, horses with chariot groups, and ridden and yoked oxen. The standard Mycenaean female figurines that are so abundant elsewhere are virtually absent. Other aspects of the sanctuary are well attested elsewhere, however. Like most Mycenaean cult places outside the palaces, this sanctuary lacks monumental construction or decorative elaboration. The pottery includes kylikes, bowls, alabastra, and rhyta, all common ritual shapes. Certain structural features, a stepped bench on which figurines were displayed, and platforms on the wall opposite the bench and in the center of the room, probably served as attention-focusing devices in the rituals and connect this sanctuary with others such as the Temple in the Cult Centre at Mycenae. Of utmost significance is the hearth, which was filled with ash and animal bones as well as scattered sherds from tripod cooking pots. Analysis of the faunal remains revealed a predominance of burnt juvenile pig bones, with lesser representation of sheep and goat (Hamilakis 2003; Hamilakis and Konsolaki 2004). The presence of all body parts suggests that these animals were burnt offerings (holocausts) to the deity rather than meals roasted for human consumption. The destruction of the entire animal body is perhaps to be understood in terms of the symbolic consumption of the offering by the deity (Hamilakis and Konsolaki 2004: 145). This is the first evidence found in a primary use context for burnt animal offerings in Mycenaean

Greece, although the practice of animal sacrifice followed by human consumption was certainly widespread (Hamilakis and Konsolaki 2004: 144). In such close quarters, the performance of ritual at Ayios Konstantinos may have created an embodied sensory experience of food, drink, music (the triton shell used as a horn), and symbolic communication with deities and ancestors through the sights and smells of burnt offerings (Hamilakis and Konsolaki 2004: 146–47).



7.12 Partial plan of excavated Mycenaean structures, Ayios Konstantinos, Methana, with Room A indicated. Konsolaki-Yiannopoulou 2002: 26, fig. 1. Courtesy of the Swedish Institute at Athens.

The anomalous features at Ayios Konstantinos are difficult to assess, since we possess few Mycenaean sanctuaries and thus do not know the true range of variation. We do not know whether the sanctuary was autonomous, serving the needs of a small rural community, or tethered to a regional center, such as Megali Magoula (Konsolaki-Yiannopoulou 1999, 2003b). Ayios Konstantinos may have been like one of the outlying communities to which the palaces sent animals for sacrifices and feasting, as attested in the Linear B archives at Pylos and interpreted from a large deposit of animal bones and tableware at Tsoungiza (Bennet 2001: 33; Dabney et al. 2004).

Kolonna itself was occupied throughout the Mycenaean palatial period, as we know from pottery and burials, but there is little architecture that can be definitively attributed to LH IIIA–IIIB, and the surviving material is sufficiently meager that the continuing status of Kolonna as a center of major political and economic importance is in doubt. There are mitigating circumstances, however. The necropolis on nearby Windmill Hill indicates a sizable population, and extensive leveling in the Archaic and Hellenistic periods has obliterated at least some of the earlier architectural complexes. Remains of buildings and terraces underneath later structures, exposed in recent excavations in the West Complex and the south slope, may be part of the “missing” fourteenth to thirteenth century center (Felten 2007: 18–19; Felten et al. 2008). The ceramic material and the tombs demonstrate that Kolonna had been incorporated into the Mycenaean *koiné*, while imports from Cyprus and the southeastern Aegean show that Kolonna remained connected to regional and interregional maritime trade.

Elsewhere on Aigina, there are ample signs that influences from the Argolid were pervasive in the palatial period. The later sanctuary of Aphaia in the northeastern corner of the island was possibly an open-air hill sanctuary already in the LBA (Pilafidis-Williams 1998). The presence of standard terracotta human and animal figurines implies the adoption of Mycenaean cult practices. Neutron activation analyses carried out on sherds and figurine fragments from the site identified an origin in the Argolid for a high percentage of both groups (Pilafidis-Williams 1998: 166–81). If we combine this evidence with the limited but growing material from Kolonna, a picture emerges of an island thoroughly invested by Mycenaean influences from the Argolid no later than LH IIIA2, and possibly earlier.

The critical juncture at which hegemony in the Saronic passed from Kolonna to Mycenae seems therefore to fall sometime early in LH IIIA,

i.e., the first half of the fourteenth century. This has been seen as some form of conflict or competition (Pullen and Tartaron 2007), but the nature of the interaction and resulting transformation is unclear. Was it a violent takeover of territory and trade routes, or was it an evolutionary process in which Mycenae's superior resources and broader networks of relations around the Aegean and beyond gradually rendered Kolonna irrelevant? There is no obvious evidence of destruction at Kolonna in this period, or necessarily of retrenchment; indeed, recent excavations indicate that "...the whole enlarged settlement was in use at least until LH IIIB" (Felten 2007: 19). Nor is there much clarity about Mycenae's specific endeavors abroad since the early Mycenaean period there is known mainly from burials, and even LH IIIA settlement in and around the citadel is poorly known because of the extensive rebuilding programs in LH IIIB (French et al. 2003; Shelton 2010).

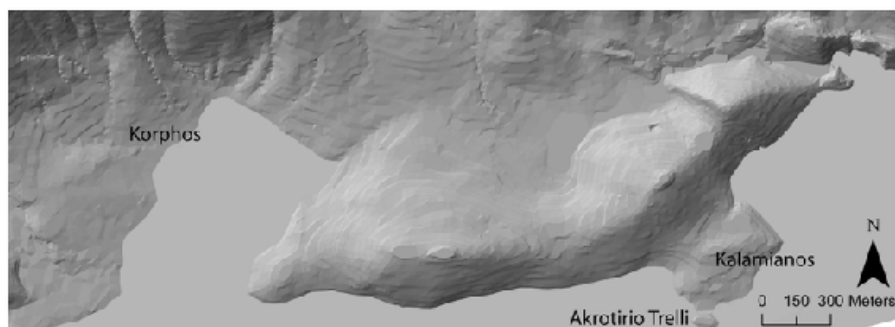
On balance, the second scenario seems more likely and has been offered as a partial explanation for the emergence of Mycenae to prominence in the Argolid (Voutsaki 1995, 1998, 1999, 2001). Sofia Voutsaki (1999: 113–14) makes a compelling case that Mycenae outmaneuvered Argive rivals such as Lerna and Asine to forge strong ties with partners on Aigina, the Cyclades, Kythera, and Crete. This network of alliances, giving access to exotic goods and raw material wealth – displayed or fashioned into high-status items deposited ultimately in monumental tombs – allowed elites at Mycenae to differentiate themselves from their counterparts in the Argolid and to position themselves, in social network terms, to accumulate ties preferentially and thus to suppress competition. As mentioned above, a similar scenario has been proposed with Kolonna as the dominant node in the Saronic Gulf, and Kolonna may even have played a role in suppressing the emergence of a palace state in the Corinthia (Pullen and Tartaron 2007: 157). Nevertheless, groups in the Argolid at Asine, Argos, Midea/Dendra, Tiryns, and elsewhere continued to bury exotic items and other forms of wealth with their dead at least through LH IIIA, before the concentration of wealth in burials was increasingly restricted to Mycenae in LH IIIB (Burns 2010: 168–90).

Thus, we can establish the likelihood, but not the certainty, that it was Mycenae that carved out maritime networks in the Saronic Gulf before LH IIIB. Given this ambiguity, it is the smaller settlements located in between Kolonna and Mycenae, such as Megali Magoula, with material spanning LH IIB–LH IIIA, and the later foundations at Kanakia and Ayios Konstantinos, through which we witness the

gradual transfer of the Saronic region from the Aiginetan to the Mycenaean sphere of influence. The last location considered in this case study, the coastal site of Korphos-Kalamianos, presents another perspective on the Bronze Age Saronic maritime small world as a settlement that alternated over time between prominence and insignificance, between high and low connectedness. A consideration of this settlement from the dawn of the Bronze Age to the end of the Mycenaean palatial period will help to round out our diachronic narrative.

Korphos-Kalamianos and the Saronic Small World

In 2001, members of the Eastern Korinthia Archaeological Survey (EKAS) discovered a large Mycenaean architectural complex at the location *Kalamianos* near the village of Korphos, on the rugged Saronic coast of the southeastern Corinthia (Fig. 7.13; Rothaus et al. 2003; Tartaron et al. 2003). The importance of the site was instantly clear: walls and foundations of buildings of Mycenaean type, some of them monumental, are exposed on the surface of the gentle seaside slope above the cape known as *Akrotirio Trelly*, covering almost eight hectares on land and an unknown further extent now submerged underwater (Fig. 7.14). In 2006, the Saronic Harbors Archaeological Research Project (SHARP), which I co-direct with Daniel J. Pullen, was constituted for the purpose of initiating investigations on the site and in its surroundings.⁵ From 2007 to 2009, a first phase of surface investigations was carried out, comprising detailed mapping and architectural study, a surface survey on the site and in a zone of seven square kilometers around it, geomorphological and environmental research, initial underwater investigations, the recording of oral histories, and various specialist studies of the artifacts collected by the survey. (For a detailed preliminary report, see Tartaron et al. 2011.) SHARP hopes to undertake excavations at Kalamianos at a future date.

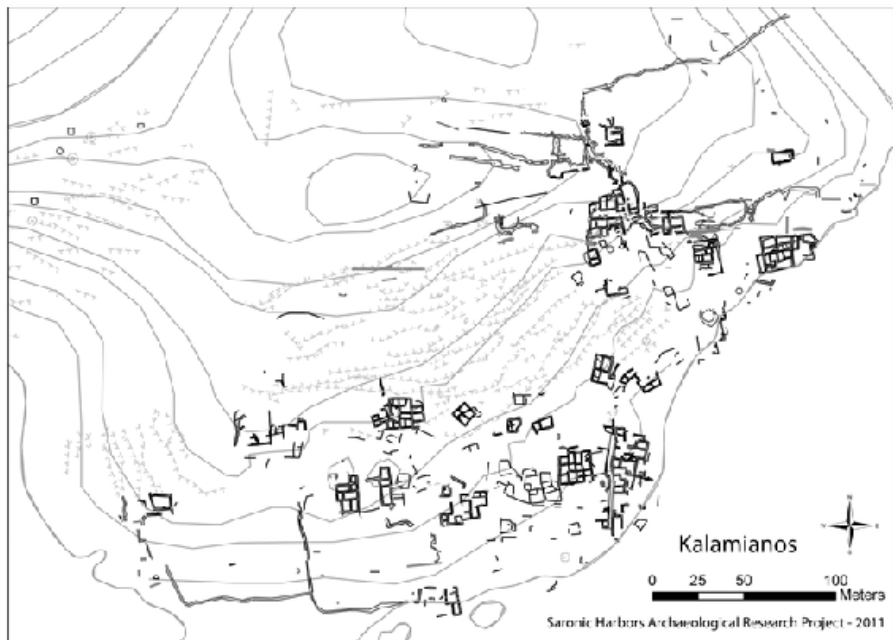


7.13 Digital terrain model of the Korphos region.



7.14 Aerial photograph of the Kalamianos site. Balloon photograph by Kostas Xenikakis and Symeon Gesafides.

The site consists of an urban settlement preserved as stone architectural foundations and walls occupying approximately 4.5 hectares set within a town wall enclosing around eight hectares (Fig. 7.15). The “empty” 3.5 hectares seem to have been used for agricultural terraces and to quarry the settlement's building stone. Because of a unique convergence of tectonic activity, erosion, and human history, these features are exposed on the surface, giving us a rare opportunity to study a virtually complete Mycenaean settlement. The buildings employ a characteristic Mycenaean large-stone and -rubble construction, with foundations and walls preserved in situ, surrounded by massive stone collapse that indicates the considerable height of the original walls (Fig. 7.16). To date we have recorded over 1,200 walls and more than 50 buildings.



7.15 GIS plan of architecture and other features at Kalamianos. Photo by author.



7.16 Example of large-rubble construction of Mycenaean buildings at

Although Kalamianos witnessed human activity at detectable levels during much of the Bronze Age, the urban settlement was a new foundation, laid out with a strong measure of central planning in a short period of time beginning around 1300 BC or a little earlier. Most buildings are oriented roughly to the cardinal directions, with long axes either north–south or east–west. Yet neither the layout nor the buildings themselves are uniform across the site. In certain areas, multiroom buildings cluster to form complexes, whereas elsewhere buildings are free-standing and often set at a distance from one another. Moreover, some of the buildings can be described as monumental while others are more modest in size and architectural elaboration. These contrasts suggest some form of differentiation that may be social, functional, chronological, or some combination thereof.

The chronology of the Kalamianos site was firmly established by a gridded intensive surface survey. Artifacts and features were recorded in regular 25 × 25 meter grids, and special collections were made from the interior spaces and rubble cores of intact buildings. The canonical masonry of the walls provides a rough chronology in the palatial period (circa 1400–1200 BC), but the retrieval of LH IIIB pottery built into the cores of the walls of many buildings provides a *terminus post quem* that indicates a construction date in the thirteenth century. A preliminary analysis of the pottery collected at Kalamianos shows how dominant Mycenaean material is relative to all other periods. If we remove the unidentifiable sherds, LBA makes up 86% with Late Roman coming in a distant second at 5.5%. Also significant is the fact that we have not yet recognized LH IIIC material, meaning that Kalamianos was likely abandoned by around 1200, and so may be closely tied to the palaces and their fate. Postabandonment phases from LH IIIC through Hellenistic are virtually absent.

Geomorphology of an Unlikely Harbor

We have strong evidence that Kalamianos was a harbor settlement in the Mycenaean palatial period, and we have come to believe that it served as Mycenae's principal Saronic harbor in the thirteenth century. Yet we could never have imagined making such bold statements upon first encountering the site. Kalamianos is by no means an obvious location for an ancient harbor: a shallowly submerged peninsula off the coast makes it impossible for even small boats to avoid the shoals and approach the shore today. We approached the Korphos region as

most observers would (e.g., Conlin 1999: 77), assuming that if an ancient harbor were to be found, it would be located in the sheltered, inviting Korphos Bay (Fig. 7.13), but Kalamianos provides a perfect illustration of the point, emphasized in Chapter 5, that we cannot assume that ancient Aegean coastlines possessed the same configurations as their modern counterparts.

The modern coastline in the Korphos region is rugged, dominated by a rocky shoreline that plunges to water depths of three or more meters, with the exception of Korphos Bay. Despite its rugged structure, the Saronic coast offers an abundance of small, sheltered anchorages. This was surely true in ancient times as well, but the configuration of the shoreline has changed dramatically since the Bronze Age due to tectonic displacements. In the Corinthia, tectonic movements have occurred along several major regional extensional fault systems with a complex history of differential fault motions. In low-lying, shallow water contexts like Kalamianos, these forces can bring about significant changes in coastal configuration with even small changes in relative sea level. The narrow land shelf at Kalamianos slopes gently into the shallow offshore waters, with depths of only several meters within 125 meters of the shoreline, after which the sea floor drops abruptly to 50 meters, and within 500 meters from shore reaches more than 100 meters depth. This feature is known to local fisherman as the “chasm,” and is exploited as a particularly fertile fishing ground that has sustained the fishing trade for generations.

We have followed multiple lines of geomorphological evidence to reconstruct the coastline and harbor basins of the Bronze Age. Recently, a Canadian-American team collaborating with EKAS determined that the coastline of Korphos Bay, about three kilometers west of Kalamianos and just southwest of Korphos village, has undergone net subsidence during the Holocene as a result of co-seismic fault motion (Nixon et al. 2009). From a series of cores taken in a salt marsh, they identified up to five phases of local coastal subsidence since the mid-Holocene, associated with seismic events resulting in rapid relative sea-level rise. The transgressive events were recognized by shifts in the abundance of microfossils (foraminifera, thecamoebians) in marsh sediments and correlated with tidal notches in the inshore area. They estimate a relative sea-level rise of about four meters in the last 5,500 years. Members of the same team recognized several beachrock platforms at depths up to 5.9 meters in the inshore areas adjacent to Kalamianos (Rothaus et al. 2003; Nixon

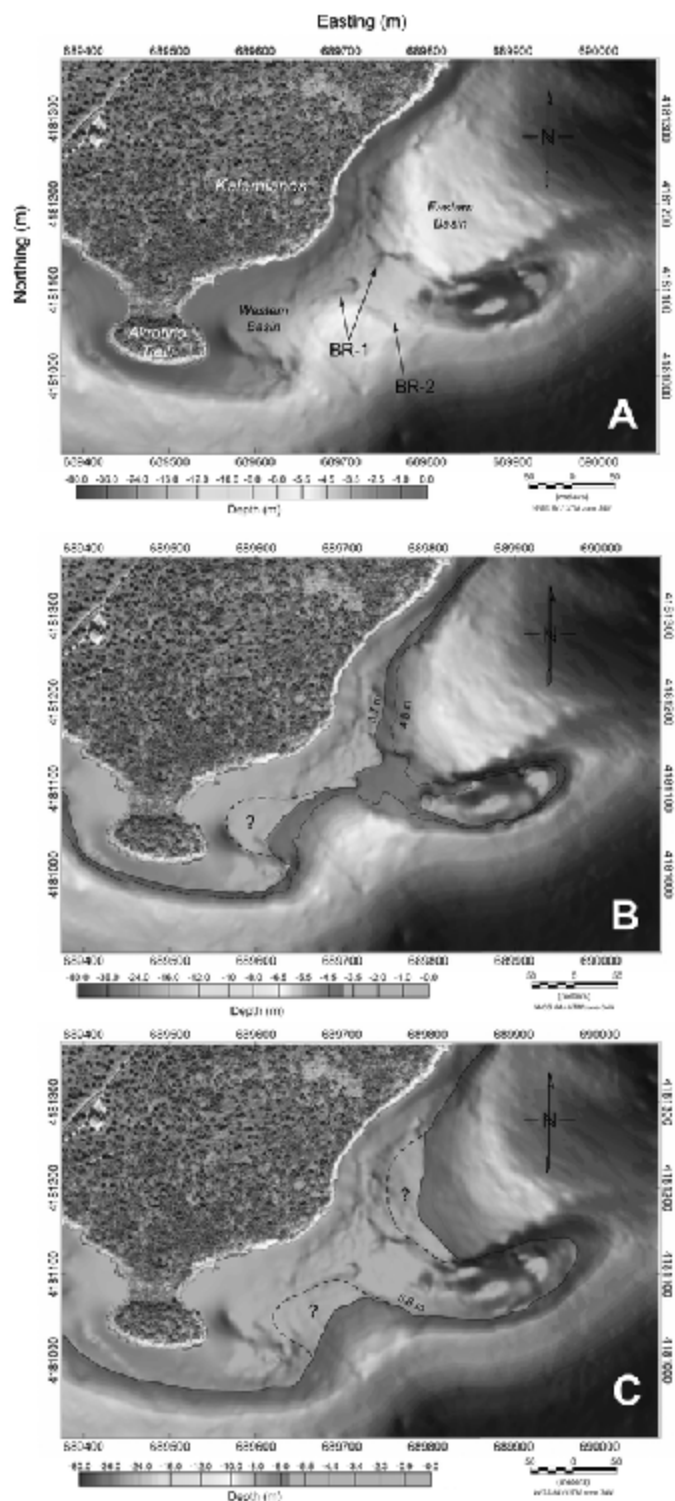
et al. 2009). These cemented beach deposits were formed in the supratidal zone close to sea level and provide a useful indicator of former sea level (Kellett 2006; Voutsoukas et al. 2007). In spite of the proximity of these two locations, their tectonic histories are not identical; Nixon and colleagues report that Korphos Bay and Kalamianos have distinct and independent sequences controlled by different fault blocks (Nixon et al. 2009: 51–52). This result illustrates how localized tectonic effects can be, with serious implications for coastline reconstruction, while the shared indications of multiple subsidence events support the archaeological evidence of submerged Bronze Age structures and artifacts off the coast at Kalamianos.

The next step toward identifying the configuration of the Bronze Age coastline and harbor basin was taken in 2009, when a collaborative project was initiated between the Canadian Institute in Greece and the Greek Ephorate of Underwater Antiquities (Enalio).⁶ More than 400 line kilometers of bathymetry, side-scan sonar, sub-bottom seismic, and magnetic survey data were acquired within a ten-square-kilometer expanse of sea in the Korphos region using a seven-meter Zodiac inflatable survey boat. The bathymetric survey generated a detailed map of the sea-bed relief around the site, and determined the location and configuration of beachrock ridges identified by previous work, which were then mapped using Differential Global Positioning System (DGPS) equipment. The sub-bottom seismic and magnetic survey data provided information on sediment thickness, bedrock structure, and location of buried ballast and pottery materials within the harbor basin. Underwater diver surveys were conducted using scuba equipment to investigate the submerged beachrock platforms and other targets identified by the geophysical survey. These were documented with underwater video and samples were obtained at several locations for ongoing laboratory analysis (grain size, micropalaeontology, pottery studies) and AMS radiocarbon dating of shell materials.

Results

Based on the results of these studies, Joseph Boyce has constructed a preliminary model of the evolving Bronze Age paleoshoreline configuration (Fig. 7.17). The bathymetry clearly identifies a submerged bedrock promontory extending east from Akrotirio Trelli and a drowned isthmus that formerly connected the small islet with the mainland coast. The submerged isthmus divides the inshore area into two separate lagoonal basins (the “western” and “eastern” basins in Fig. 7.17a). Two distinct beachrock platforms (BR-1, BR-2) appear

in the bathymetry mapping and were confirmed by diver survey. BR-1 consists of two mound-like beachrock outcrops located on the submerged isthmus, about 100 meters from shore. The mounds are up to 1.2 meters in height, 30 to 40 meters in length, and about 20 meters in width. Both outcrops are elongated roughly parallel with the modern shore and have a basal water depth of 3.2 to 3.6 meters. Cemented into the calcarenite of BR-1 are thousands of Mycenaean sherds, constituting around 30% to 50% of the beachrock volume and showing little sign of post-depositional reworking or biological alteration. This condition is consistent with rapid burial, as with a tectonic event, in a supratidal low-energy beach environment. The lowermost beachrock platform (BR-2) occurs at a depth of 5.4 to 5.8 meters on the western margin of the submerged promontory. The beachrock is about 0.4 to 0.6 meters in height and incorporates well-preserved sherds of EH pottery making up 10% to 20% of the beachrock volume. This pottery also preserves surface decorative features and lacks significant post-depositional reworking or biological alteration, consistent with rapid burial. Because beachrock forms at the interface of shore and sea, and because the Aegean is nearly tideless, we know that at one time BR-1 and BR-2 were shoreline positions. The pottery cemented into the platforms gives *terminus post quem* dates for the formation of the beachrock; that is, BR-1 could not have formed prior to the Mycenaean period, and BR-2 must have formed in the EBA or later. Yet because the condition of the pottery suggests rapid burial and not gradual transport or wearing away of surfaces, and because our examination of the potsherds to date indicates segregation of the pottery phases with little mixing of earlier or later material, it is highly likely that the broken sherds were incorporated into the deposits roughly during the time of their use, whether as the refuse of normal harbor activities or the result of a catastrophic tectonic event.



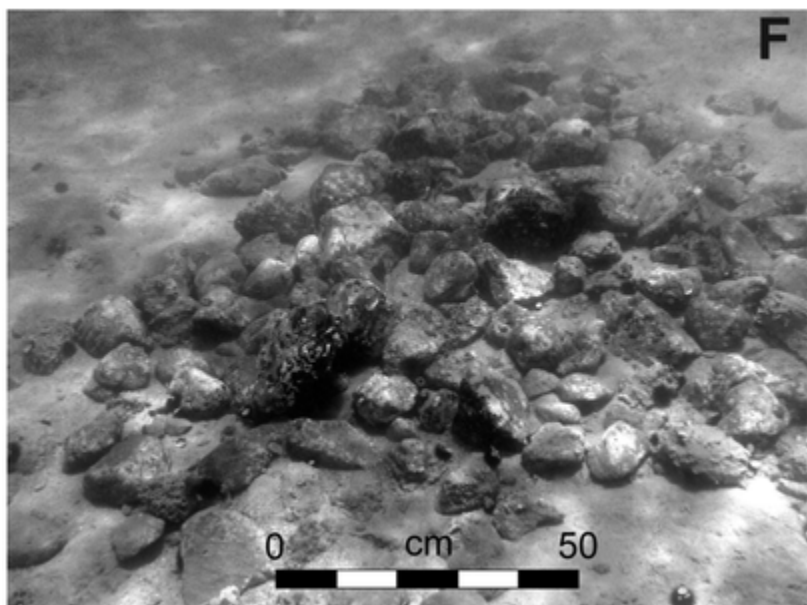
7.17 Reconstructed coastlines and harbor basins at Kalamianos. Courtesy of Joseph I. Boyce, Despina Koutsoumba, and the Trustees of

The provisional chronology derived from the associated pottery allows us to assign the BR-1 shoreline to LH III (circa 1400–1200 BC) and the BR-2 shoreline to an EH phase (circa 2700–2200 BC).⁷ As reconstructed, during the LH (Mycenaean) phase the islet was much more extensive than at present (approximately 500 square meters) but separate from the mainland. The bedrock promontory on the east side of Akrotirio Trelli would have provided a sheltered anchorage site (western basin) with a deep-water approach, the extent of which is approximate because the thickness of the post-Mycenaean sediment fill has yet to be established in seismic and core data. During the Mycenaean phase, small boats could have been pulled up onto shore, and larger ships may have anchored in the western basin or moored at the offshore island. The process of onloading and offloading may have generated much of the broken pottery preserved in BR-1. The western basin would have provided a sheltered anchorage during periods when the dominant winds were blowing from the north or west to southwest, accounting for most wind patterns throughout the year. During periods when winds were blowing from the east and southeast, the offshore island offered some protection from winds and along with the submerged promontory diminished wave energy, but ships might also anchor off the western side of Akrotirio Trelli.

During the EH phase, the local relative sea level was about 5.4 meters below present and the island was connected to the mainland via an isthmus that stood 1.0 to 1.5 meters above sea level. Together, the island and isthmus formed a natural recurved breakwater about 250 meters long and 40 to 50 meters wide, creating a well-protected double harbor configuration with many options for moving watercraft as required by weather conditions and a sufficiently deep approach to permit even the largest seagoing vessel of the day – the Cycladic longboat – to anchor close to shore.

Other important clues to the location of anchorage sites were obtained from the distribution of ships' ballast, which can be detected by a magnetic gradiometer survey even when buried at some depth (Boyce et al. 2009). Magnetic surveys in the eastern and western harbor basins at Kalamianos identified a number of magnetic "hotspots" found by subsequent examination to be associated with accumulations of volcanic ballast stones and pottery, which have a significant induced and remnant magnetization compared to the local limestone bedrock and seafloor sediments. Diver reconnaissance

surveys of the western basin identified a number of small ballast stone piles and a large, partially exposed ballast mound consisting mainly of andesitic boulders and limestone cobbles (Fig. 7.18). The exposed portion of the ballast mound is four to five meters in diameter and includes scattered Mycenaean pottery fragments. Mapping the distribution of magnetic anomalies and recording their sources is helping to pinpoint the locations of anchorage sites. An intriguing and possibly telling pattern in the magnetic data shows numerous anomalies all around Kalamianos, but few in Korphos Bay. This pattern seems to confirm that Kalamianos was the area's primary anchorage, and there is some evidence that the modern Korphos Bay may have been primarily a wetland in the Bronze Age.

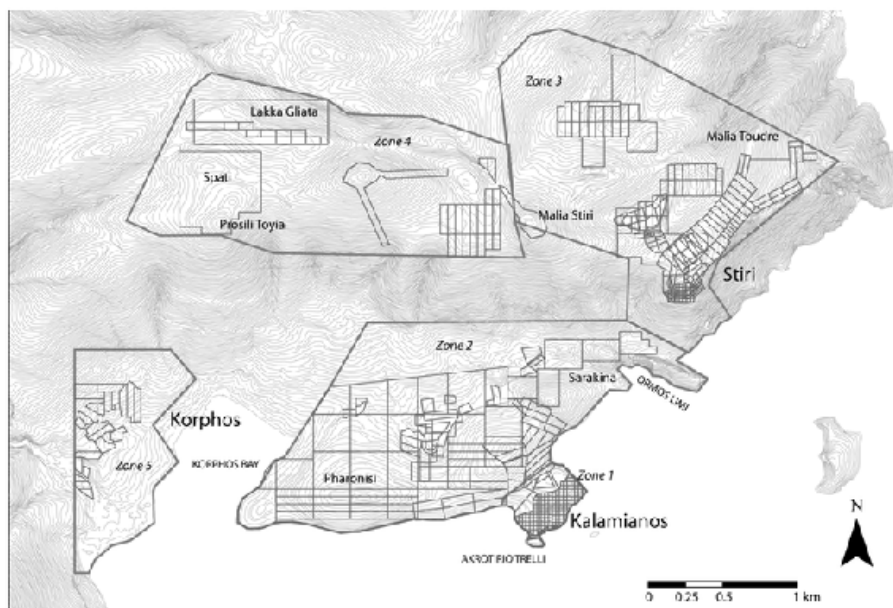


7.18 Ballast pile identified in inshore waters at Kalamianos. Courtesy of Joseph I. Boyce, Despina Koutsoumba, and Trustees of the American School of Classical Studies at Athens.

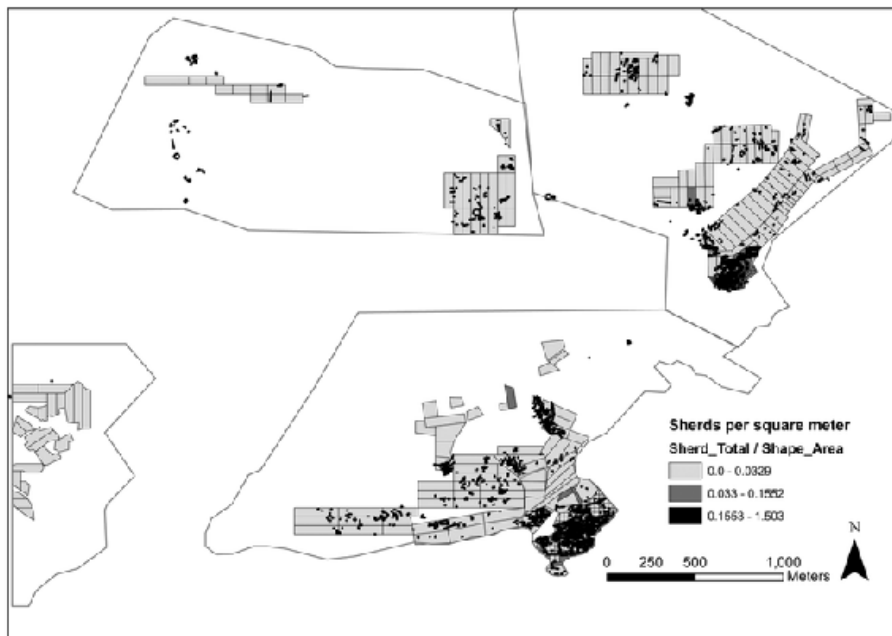
Beyond the Site: Korphos as a Bronze Age Regional Center

SHARP undertook a systematic surface survey of seven square kilometers outside the walls of Kalamianos from 2007 to 2009, using both intensive and extensive methods (Fig. 7.19; Tartaron et al. 2011). The survey aimed to contextualize Kalamianos in its wider microregional setting, in order to better understand how the harbor town was sustained by and connected to its interior hinterland. We

were astonished to discover that the survey area was nearly as rich as Kalamianos itself in ancient architectural remains, similarly exposed on the modern surface (Fig. 7.20). The bulk of this architecture dates either to the EBA or LBA, and we quickly realized that these were the periods in which the Korphos region came to some kind of prominence in the past. Each of these periods is characterized by three kinds of architectural remains (Table 7.2). Taking each in turn, we shall see that there are similarities, but also interesting differences in the locations where people chose to build, and in their overall use of the landscape.



7.19 SHARP survey zones and survey units.



7.20 Ancient architectural remains in the SHARP survey area, marked in black.

Table 7.2. *Classes of EBA and LBA architectural remains in the Korphos region*

Early Bronze Age	Quantity	Late Bronze Age	Quantity
Habitation sites (Kalamianos and Stiri)	2	Habitation sites (Kalamianos and Stiri)	2
Stone cairns	Approximately 25	Agricultural terrace walls	Dozens to hundreds of preserved segments
Elliptical stone enclosures	Approximately 20	Fortified stone enclosures	2

Early Bronze Age

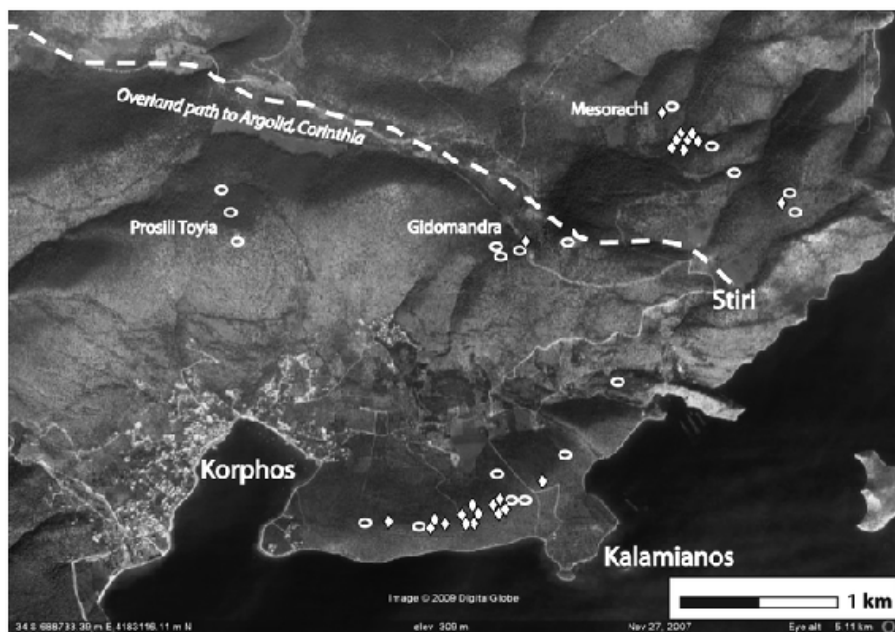
The earliest material recovered in survey is pottery belonging to the Final Neolithic/Early Helladic; although it is difficult to be more specific chronologically for unstratified material using only formal criteria, there are reasons to believe that most of these sherds date no

earlier than the end of the long FN period or the beginning of EH. Remarkably, the whole range of vessel forms, from tableware to cooking and storage pots, contain inclusions (almost certainly temper) characteristic of the volcanic suite of minerals found on Aigina.⁸ The reddish, iron-oxide-rich fabric may derive from local terra rossa clays, tempered with crushed volcanic rock retrieved from andesite imported from Aigina as raw material or as finished ground stone implements. The appearance of Aiginetan volcanic rock in the Korphos region at this early date is consistent with Curtis Runnels' (1985a) finding that the island exported volcanic millstones by Late Neolithic, and it implies that Aigina was already becoming a center in the Saronic region. Close connections with Aigina already in the EBA are not surprising, since Kolonna and Kalamianos are intervisible sites; indeed, on a clear afternoon it is possible to make out the archaeological site of Kolonna from Kalamianos.

EBA material (architecture, pottery, lithics) is spread throughout the survey area. During the EBA, there were two substantial settlements in the Korphos region: a seaside settlement at Kalamianos – now mostly submerged and without obvious architectural remains preserved on land – and a quite large settlement at Stiri, perched high above Kalamianos on a coastal bluff (Fig. 7.19). The most striking feature of the poorly preserved settlement at Kalamianos is an obsidian workshop now eroding from gravels near the modern water's edge. All stages of the reduction process, from raw nodules with preserved cortex to finished blades, are present. Inland from Kalamianos, obsidian is ubiquitous, but occurs mainly as finished blades and flakes, although cores and other pieces show that tool making took place on a small scale in many locations.

The settlement at Stiri is marked by discrete fields of stone on the sea-facing southern slope, replete with EBA pottery and stone artifacts, which represent the locations of collapsed structures. Several thousand pottery sherds and obsidian flakes and blades were concentrated over an area of approximately four hectares on the peak and surrounding slopes, making Stiri a very substantial settlement for its main period of occupation in EH II. The pottery encompasses a wide range of types and decorative styles, indicating a thriving domestic settlement with local and long-distance trade contacts. Two likely motivations for occupying this location are the vast viewshed over the Saronic Gulf, and ready access to a number of small but well-watered upland basins ideal for small-scale agriculture.

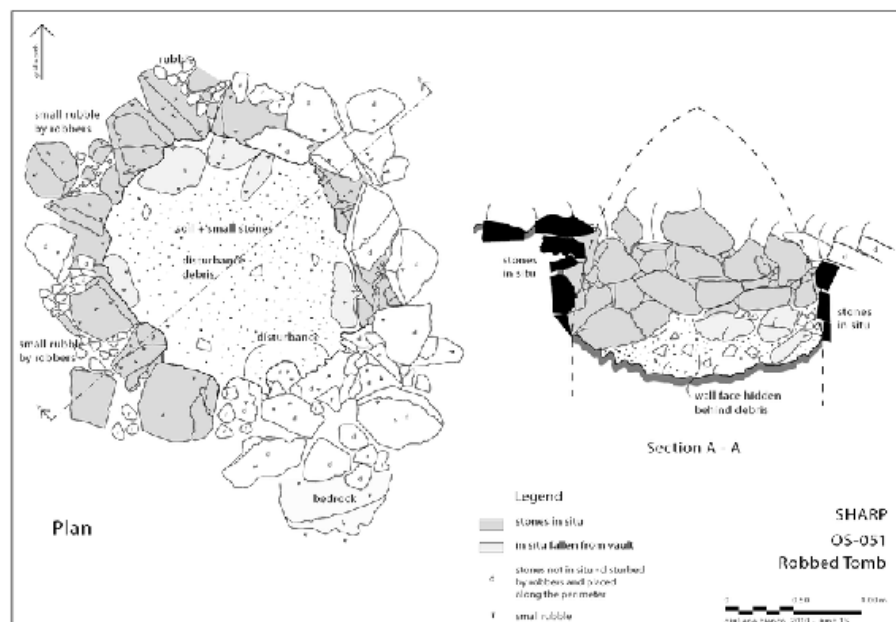
A second architectural manifestation of the EBA comprises about 25 enigmatic cairns – amorphous stone piles distributed both on the ridge of the Pharonisi peninsula north and west of Kalamianos, and in the upland basins to the north (Fig. 7.21). These cairns can be distinguished from modern field clearance piles by their form, erosional features, and artifactual associations. Pottery retrieved from their interiors is of FN–EH II type, with no certain later material. They occur in a larger and a smaller size that seem to relate to different functions. The larger cairns are similar to those we have investigated in the last decade at Vayia and Vassa in the northeastern Peloponnese, where collapsed but partly preserved wall faces suggest an originally squarish, perhaps tower-like form that we interpreted as collapsed bastions in enclosure walls around EH II settlements (Tartaron, Pullen, and Noller 2006). Those cairn groups tend to snake through the landscape, with large cairn mounds connected by wide linear stone piles that we interpreted as walls. There are only two certain cairns of this scale in the survey area, and unlike at Vayia and Vassa, their relationship to known settlements is unclear.



7.21 Satellite image with locations of stone cairns (diamonds) and enclosures (ovals). Satellite image © 2009 Google Earth, © 2009, Digital Globe.

The smaller cairns cannot be interpreted in the same way. They are far more numerous (23 of 25), and their form is more limited to a round or elliptical mound of stone, without radiating linear features.

In one of the smaller cairns, illicit digging revealed a cavity or chamber built up in a corbelling technique, which suggests the strong possibility of a burial chamber, though no finds were discovered inside (Fig. 7.22). Despite the differences between the small and large cairns, they share one intriguing feature: most have one or more depressions in their upper surfaces, suggesting a collapsed cavity such as the one revealed illicitly. It is thus possible that all of the cairns are funerary monuments, with simpler and grander versions.



7.22 View and drawing of a small cairn on the Pharonisi peninsula. Drawn by Giuliana Bianco.

The collapsed cairns of the Korphos region would have been taller than they appear today, and more visible on the landscape locally and from a distance. They were placed in prominent ridge-top locations with expansive viewsheds and high intervisibility with other EBA cairns and enclosures. Typically, they overlooked both the sea and adjacent arable land, suggesting that they were meant to be seen from the sea, and possibly also served as territorial markers manifesting the claims of a living community to land and resources through explicit links of descent from ancestors who occupied them in the past (Murphy 1998; Saxe 1970). Whatever the range of functions, the cairns in the Korphos area can now be associated with at least a regional, and not simply a local, tradition in the northeastern Peloponnese.⁹

The final architectural type comprises approximately 20 walled stone enclosures, found in virtually every part of the survey area, which can now be confidently dated to the EBA on the basis of associated artifacts – we have not recovered later material from the features themselves – as well as geomorphological observations. Though predominantly elliptical in form, they range from round to elliptical to squarish and vary in size from 15×12 meters to 25×30 meters, translating roughly to between 125 and 700 square meters of internal space (Fig. 7.23). The locations and viewsheds of the enclosures provide the best clues to their functions (Fig. 7.21). Most have excellent views both to the sea and to nearby arable land below them. Almost every enclosure is potentially intervisible with at least one other, and many with several others, although we lack information on vegetation cover and we cannot definitively establish that the enclosures are all contemporary. Yet it appears that they were placed systematically and strategically on the landscape with a carefully rationalized social purpose. Some potential functions include monitoring stations with views to the sea, to agricultural territories, and to an upland basin-to-basin route running west to give access to the interior Corinthia and the Argolid; collection structures for agricultural produce; animal enclosures; territorial markers; or forts or similar defensive complexes. Perhaps they combined all of those functions as the strongholds of extended family or kin groups arrayed across a contested agropastoral landscape. Historical and ethnographic examples of contested landscapes resulting in functionally comparable structures can be found in Greece and the Balkans (e.g., Galaty in press; Galaty, Lee et al. 2009; Karakatsianis 2010; Mangalakova 2004; Wagstaff 1965).



7.23 View of an EBA stone enclosure.

There also seems to be a chronological and conceptual association between the cairns and enclosures. The stone enclosures are closely associated spatially with cairns at several locations, but elsewhere they seem to be isolated or semi-isolated from other architectural complexes. Yet both are embedded in the same webs of intervisibility: cairns are visible from enclosures and vice versa. Most decisive, however, is the fact that at two or three places, cairns and enclosures are combined into a single feature. Together, these features present a highly humanized, and perhaps competitive, rural landscape in EH II.

The implication of this busy countryside is that the Korphos region was an important EH center, a coastscape interacting with other coastal centers in a period of high connectivity. The importation of Aiginetan andesite and obsidian from Melos, 170 kilometers distant, shows Kalamianos already operating as a major harbor. Whether the obsidian was obtained directly on Melos by Korphiote voyagers, purchased from visiting Cycladic traders, or acquired through Aiginetan intermediaries, the fact remains that Kalamianos is one of relatively few import and primary reduction centers known in the Aegean, joining the list of such sites as Lerna in the Argolid (Hartenberger and Runnels 2001; Runnels 1985b), the Fournoi cluster in the southern Argolid (Kardulias 1999: 64–71; Kardulias and Runnels 1995: 104–108; Van Andel and Runnels 1987: 89–91), and Romanou in Messenia (Parkinson 1999). In the reconstructed EBA coastline, the obsidian workshop lies close to the shore of the western basin.

In EH II, the sequence of corridor houses and other signs of emerging complexity at Kolonna indicate that it continued to be the center of a Saronic small world, with cultural ties, though not yet regular trade relations, with other coastal settlements with fortifications and corridor houses. Kalamianos/Stiri played a significant role in the Saronic small world, though it is difficult to know if labels such as “peer of Kolonna” or “secondary center” are appropriate. The Saronic Gulf was apparently a vibrant place in EH I–II before a precipitous decline sometime in EH III. EH material has been found in almost every area subjected to excavation or regional survey; perhaps the most compelling demonstration of general vitality emerges from systematic, intensive surveys. The Methana Survey team, though by their own account working in a “rough and rocky place,” nevertheless recorded fifty-one sites with EH pottery in the

limited confines of the Methana peninsula, roughly evenly divided between EH I and EH II (Mee and Taylor 1997: 42–51). SHARP has located dozens of scatters of EH sherds in its own small survey area, many of these not directly associated with the EH sites or architectural features described above.

The data from SHARP and Methana are again informative about the period of abandonment, or at least retrenchment, between EH III and the end of the MH period. SHARP has produced no certain EH III or MH pottery, with the possible exception of a few sherds with standard Aiginetan potters' marks that may fall sometime in MH I–LH I. On the Methana peninsula, both EH III and MH sherds are rare, though present (Mee and Taylor 1997: 51–52). This is precisely the period in which the vibrant Saronic small world of the EBA collapsed, compelling Kolonna to refocus its energy beyond the Saronic Gulf. That the gulf was not an entirely empty seascape, however, is underscored by the recent discovery on Salamis of a large MH II–III acropolis-type settlement at Sklavos, on the island's southern coast facing Aigina (Lolos 2010). It seems, therefore, that scattered pockets of the Saronic still supported substantial communities, while most places were reduced to tiny hamlets or abandoned altogether.

Late Bronze Age

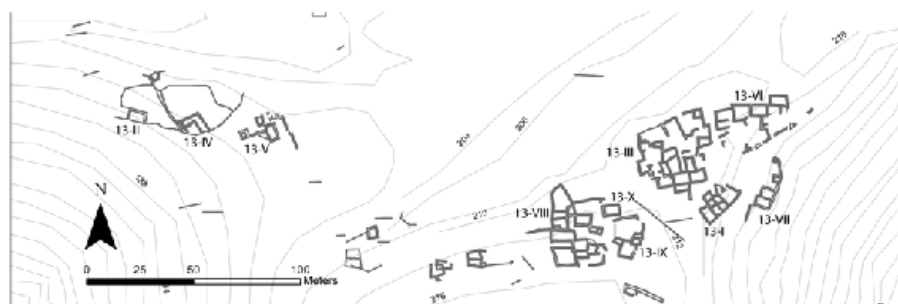
During the LBA, the Mycenaean harbor settlement at Kalamianos was the main, anchoring center of the Korphos region. Pottery recovered at the site indicates that a settlement of modest size had taken root in the fourteenth century – just less than 10% of the LH assemblage at Kalamianos belongs securely to LH IIIA. From this inconspicuous beginning, in the early thirteenth century, i.e., the LH IIIB1 pottery phase, the urban harbor complex was built and became one of the more important sites in the Saronic region. It was also in the thirteenth century that the Mycenaean developed the hinterland to harness the agricultural and pastoral potential of the lowland and upland zones, in support of Kalamianos' maritime (and perhaps overland) connection to the Mycenaean economy. The physical traces of this expansion include a second substantial settlement built at Stiri over a part of the old EH site, a large fortified enclosure in the territory between Kalamianos and Stiri, and dozens of agricultural terrace walls of Mycenaean date.

The Mycenaean settlement at Stiri sits on a ridge overlooking a double-lobed basin to the west, and the sea to the east and south (Fig.

7.24). As at Kalamianos, the foundations and lower walls of several distinct complexes of well-constructed buildings are exposed on the surface, preserving the plan of the settlement in its apparent entirety (Fig. 7.25). At around 1.4 hectares in extent, Mycenaean Stiri is less than one-fifth the size of Kalamianos. The masonry technique is essentially the same as at Kalamianos, although Stiri lacks the monumentality of some buildings at the harbor site, and the varied building plans do not match those at Kalamianos particularly closely. Yet the buildings are remarkable in their own right, such as the sprawling central structure 13-III that consists of between 35 and 40 rooms. The Mycenaean artifacts recovered within rooms and wall cores belong exclusively to LH IIIB, showing that Stiri was a later foundation than Kalamianos, but also that the two settlements overlap chronologically in that phase.



7.24 View of Stiri and adjacent polje, with location of the Mycenaean site indicated.

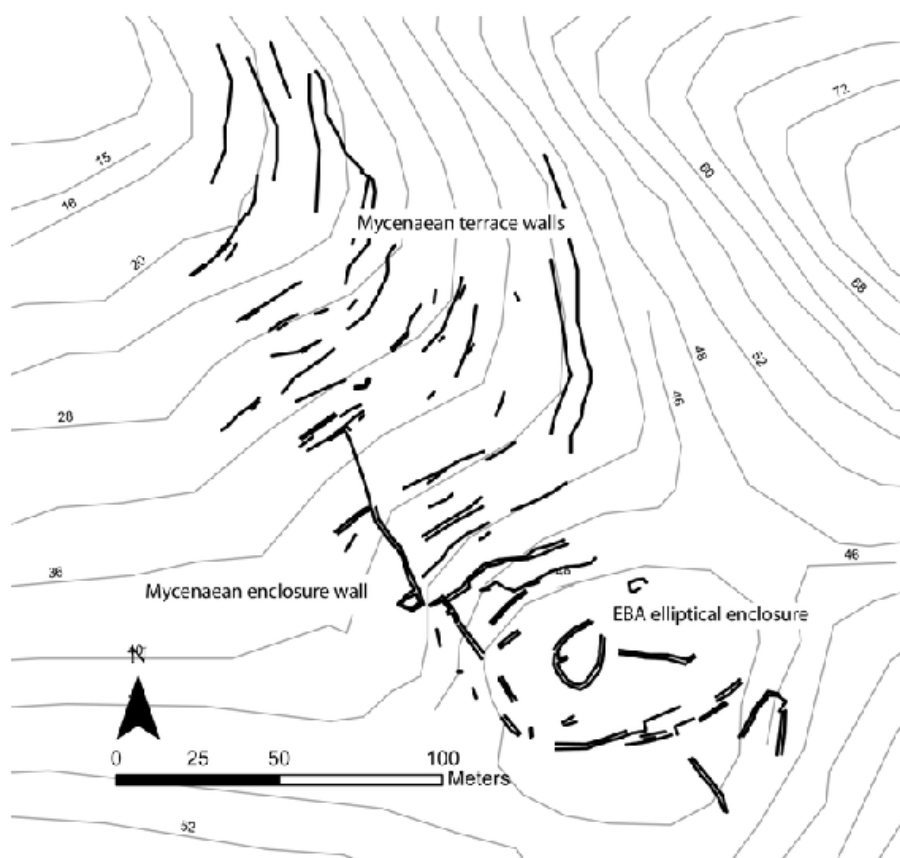


7.25 Differential GPS plan of Mycenaean architecture at Stiri.

Location must have been an important factor in the role Stiri played in the Mycenaean coastal world of the thirteenth century BC. Perched

on a high sea cliff with an unobstructed view of Kalamianos, Stiri was undoubtedly in constant communication with the harbor town below. A sweeping viewshed extending from Athens and Salamis in the northeast to Aigina and Methana in the east and southeast allowed the inhabitants to monitor seaborne traffic on the Saronic. A second important function is suggested by the basin west of the site, which is well watered by springs and winter rains, making agriculture and pastoralism possible on a relatively large scale. Intensive cultivation of wheat and olives has been practiced here in recent times, along with grazing of sheep and goats on wheat stubble and in the wooded hills all around. This productive landscape may have been systematically developed to provide staple crops, animals and their secondary products, and trade goods to the harbor community at Kalamianos.

In the sloping terrain between Kalamianos and Stiri, a large Mycenaean walled enclosure was situated in a saddle between two low peaks immediately north of Kalamianos, consisting of a large space enclosed by partially preserved fortification-grade walls that can be traced for about 180 meters ([Fig. 7.26](#)). Within the presumed interior, there are many terrace walls of Mycenaean type on the north slope facing a large basin that may have been another locus of agricultural activity. Also preserved inside the fortified area is one of the elliptical stone enclosures of EBA date. To the south, the sea view is limited, but the harbor at Kalamianos is plainly visible. This site may have been the agricultural estate of a high-status family or individual, connected closely with the settlement at Kalamianos and perhaps with elite families there.



7.26 Plan of architectural features at the “saddle site” north of Kalamianos.

In the territories adjacent to the two main settlement sites, the Mycenaeans invested heavily in terrace wall construction, apparently to maximize agricultural potential in this stony, semi-arid landscape. The terrace walls are the subject of a recent dissertation by Lynne Kvapil, whose important contribution has been to systematize the documentation and dating of terraces throughout the study area (Kvapil 2012). Systems of terracing dating to the Mycenaean period have been found at Kalamianos itself, on the western slopes of the hill north of Kalamianos, on the south-facing slope of the Pharonisi peninsula, in the saddle area described above, and on the steep south slope below Stiri. At Stiri in particular, the slope facing the sea was terraced with massive walls in Mycenaean masonry technique, sections of which survive on contours from top to bottom (Fig. 7.27). One aspect of their construction that ties them closely to Mycenaean architectural practice is the use of stones with flat outer faces and long, triangular trailing edges that help to bond the wall with the

terrace behind it. This technique is also clearly seen in wall building at the two settlement sites. The southern slope at Stiri is the steepest on which the Mycenaeans built terraces, partially explaining their monumentality, but just as important was their prominent visibility from the sea. As at Kalamianos, monumentality and high visibility seem to have been as integral to the design of the built environment as their utilitarian function. Although there were several basins suitable for agricultural exploitation in both the lowland and upland zones, it seems that the Mycenaeans felt the need to maximize agricultural yields to support the population of this microregion and perhaps to generate a surplus for shipment from the harbor at Kalamianos.



7.27 Monumental Mycenaean agricultural terrace walls at Stiri.

Comparing Early and Late Bronze Age Exploitation

There are similarities, but also important differences, in EH and LH patterns of activity in the Korphos region. The Mycenaean inhabitants occupied Kalamianos and Stiri as their primary settlements, as had their counterparts in EH. These locations make sense as the lowland and upland anchors of the region, giving access to the sea at Kalamianos and agropastoral resources as well as panoramic viewsheds at Stiri. In LH IIIB, Kalamianos was a much larger and more important settlement than Stiri, while in the EBA the relationship was

reversed. Mycenaean habitation at Stiri was confined primarily to the ridge top; the steep south-facing slope was apparently used only for agricultural purposes as many segments of strongly built terrace walls survive but counts of LBA artifacts are quite low.

Beyond the two main settlement sites, the differences in the distribution of remains and use of the landscape are striking. The most distinctive difference is that EBA activity, measured both by architecture and portable artifacts, was much more extensive throughout the survey area, while the Mycenaean activity pattern was more spatially limited, focused on the habitation sites and their immediate surroundings. A likely explanation for this difference is that EBA activity was the result of a long development, begun already in FN, and thus a “settling into” the landscape. Depending on how far back into FN the activity began (and this we do not know at present), a period of a millennium or more is indicated to the end of EH II. The EBA signature developed over a relatively long period of gestation leading to a flourishing and complex society in EH II.

The Mycenaean distribution, on the other hand, reflects a deliberate but short-lived transformation of physical and social landscapes in which emigrants, most likely from Mycenae, arrived in the late fourteenth century to a sparsely populated area, built a harbor at Kalamianos, and developed the hinterland to support it. The identification of Mycenae as colonizer of Kalamianos rests on circumstantial evidence, which taken together presents an argument that we have found persuasive, if not yet conclusive. It is perhaps most accurate to say that the evidence draws us to the Argolid, with Mycenae consistently the most plausible option. The Mycenaean fineware collected from Kalamianos and Stiri exhibits general affinities with the Argolid, while the architecture offers compelling parallels in construction techniques and monumentality (Tartaron et al. 2011). The large-rubble construction of buildings at Kalamianos can be classified as Type III cyclopean masonry in Claire Loader's (1999: 27–31) typology, characteristic of the Argolid and other Mycenaean core areas. The Mycenaean agricultural terrace walls, particularly at Stiri, show strong similarities to those in the vicinity of Mycenae itself. It is also possible to make a case that Kalamianos was the most conveniently located anchorage offering Mycenae access to the Saronic Gulf, Attica, and the Isthmus of Corinth, particularly since the evidence of Mycenae's presence in the northern Corinthia is slim (Pullen and Tartaron 2007; Tartaron 2010). There is a modern land route beginning at Korphos or Stiri, which follows a series of

interconnected east- to west-trending basins and passes through Angelokastro and Limnes, before joining the Mycenaean road at Berbati to finally reach Mycenae after a journey of approximately 50 kilo-meters on foot. This route is attested by villagers in the Korphos/Sophiko area, and members of SHARP have made the walk on several occasions in a single day, requiring between nine and thirteen hours depending on fitness. It is by no means an easy walk, but even making allowances for ancient tracks rather than modern roads, a two-day journey with a donkey would not have been difficult.

Mycenae's interest beyond the connectivity offered by the maritime station was agricultural intensification in small pockets of fertility, while the upland zone also monitored the sea and connected the region to routes leading to the interior of the Corinthia and the Argolid. The timeframe of their arrival in the late fourteenth or beginning of the thirteenth century, as suggested by the ceramic evidence, coincides with the explosion of sites with Mycenaean characteristics on the islands and shores of the Saronic (see [Fig. 7.10](#)). By the late fourteenth century, the penetration of Mycenaean material culture was profound, encompassing not only styles of architecture and pottery, but also burial and cult practices, including the objects that accompanied them – such as the ubiquitous anthropomorphic and zoomorphic figurines that might betoken the propagation of a state religion.

Mycenae's presence in the Korphos region was intense but brief, lasting perhaps only 100 or 125 years, before the abandonment of the region circa 1200 BC, roughly synchronous with the collapse of the palace state at Mycenae. The brevity of Mycenae's presence precluded expansion into all niches in the landscape as a normal consequence of development and growth. However, the substance and monumentality of the Mycenaean constructions suggests that they were built for permanence, and surely long-term growth was expected before it was truncated by the collapse of the palaces.

Korphos and the Saronic World through Time

The results of SHARP's field studies permit the outlines of a diachronic narrative for the Korphos region to be interwoven with that of Kolonna and other communities to develop a larger history of the Saronic maritime small world.

Sometime before the beginning of the third millennium BC, potters

in the Korphos area were importing Aiginetan volcanic stone, which they crushed and used as temper in the full range of functional pottery classes. Incipient settlement in the SHARP survey zone in FN/EH I grew steadily, culminating in a highly developed economic and social exploitation of the landscape in EH II. During that phase, raw obsidian was imported from Melos and worked into tools at a workshop overlooking the western basin of the harbor at Kalamianos. Stiri was a large settlement well situated for agropastoral subsistence and for expansive views over the Saronic Gulf. The pottery assemblage at Stiri represents a full domestic suite, and shows that the inhabitants were connected to sources of contemporary shapes and decorative styles. The Korphos region can thus be counted among the nucleated and socially complex coastal centers of the EH II Aegean. At that time, Kolonna, with its large settlement and two phases of a grand corridor house, was the most important settlement in the Saronic and well along its trajectory toward regional domination. This was a period of cohesion in the Saronic small world as settlements in places like Kalamianos, Kiapha Thiti, and the Methana peninsula interacted with Aigina, and, although it is nearly impossible to prove, surely with neighboring small settlements as well.

From EH III to the beginning of the Mycenaean palatial period, Kalamianos is almost invisible archaeologically, like so many other small settlements of the northeastern Peloponnese. This hiatus lasted even longer than for the many communities that were founded or revitalized in MH III or LH I. The scant evidence of human presence, consisting of a few sherds at Kalamianos with standard Aiginetan potmarks, is insufficient to project more than a sparse, inward-focused population engaged in agropastoral pursuits, with limited external contacts between 2200 and 1400 BC. This dramatic depopulation prevailed throughout the Saronic, with the principal exception of Kolonna, which exploded into complexity with continuous expansion of the settlement, characterized by massive building programs of fortifications and dwellings. Kolonnans now developed long-distance contacts with Minoan Crete, the Cycladic islands, central Greece, and the interior Peloponnese, in part to compensate for the deep reduction in connectivity within the Saronic Gulf. They imported pottery and may have hosted a small enclave of Minoan potters, but soon Aiginetan potters developed their own highly successful export industry that persisted well into the Mycenaean palatial period, and for specific shapes even to its very end.

The recolonization of the northeastern Peloponnese and the lands

bordering the Saronic in MH III–LH I, and the events of the Shaft Grave Era in the Argolid, seem to have drawn Kolonna's attention back to the Saronic Gulf. The earliest phases of the LBA marked a time of prosperity and high connectivity between Aigina and the settlements on the islands and coasts of the Saronic, along with more distant partners in Attica, the northeastern Peloponnese, central Greece, and the Aegean Islands. Mycenaean-style painted pottery of LH I–IIA is rare in the circum-Saronic area. The Saronic small world, although nested geographically within the Helladic realm, may have been culturally distinct from the emerging Mycenaean palatial state in the Argolid, and seems to have resisted its expansion into the Saronic Gulf. By LH IIB, when Mycenaean fineware pottery had begun to appear around the Saronic, the inhabitants of Megali Magoula in the Troizenia were building tholos tombs, perhaps signaling the establishment of a Mycenaean foothold on the western shores of the Saronic. During the crucial transition to early LH IIIA, Kalamianos was part of a contested periphery – the setting for a competitive process in which Mycenae extended its sphere of influence into the Saronic Gulf at the expense of Aigina. The foundation of a number of centers large and small in LH IIIA, such as Kanakia and Ayios Konstantinos, coincided with the decline of the Aiginetan pottery export industry and the adoption of Mycenaean cult practices at Aphaia.

The founding of a port town at Kalamianos, probably by Mycenae circa 1300 BC or slightly earlier, served two objectives: first it was a foothold and safe haven for maritime economic and military activity in the Saronic, and second it was a definitive statement of Mycenae's ascendancy. This statement is encoded in the monumentality of the architecture at Kalamianos and the terrace walls at Stiri, quite remarkable in contrast to other Saronic settlements of the period, marking Kalamianos as a second-order center and probably Mycenae's principal Saronic harbor. This display of power was probably not specifically aimed at Aigina, since Kolonna by that time was no longer a legitimate threat. Instead, it was a characteristic habit of the Mycenaean Argolid to build monumental structures as an advertisement of power, from the shaft graves and tholos tombs to the fortification walls and elaborate buildings on their citadels. The imposing architecture at Kalamianos and Stiri was meant to be seen from the sea.

Kalamianos was a coastscape and the anchor of a maritime

microregion characterized by highly developed internal organization, which was at the same time the creation of the wider Mycenaean world, to which it was closely connected by both sea and land. The Korphos region was developed to support the role of Kalamianos as a working harbor town, giving rise to a second substantial settlement at Stiri and a system of agricultural terracing. Kalamianos was not a long-lived settlement, however. The rapid and intensive development of this microregion ceased abruptly circa 1200 BC, when Kalamianos and the other sites were abandoned, suggesting a strong association with the fate of the palaces and many other settlements that were destroyed or abandoned at that time.

Oral History and Kalamianos

In the absence of written records in prehistory, different forms of ethnographic and ethnoarchaeological research can contribute to enlightening hypotheses about the conditions of seafaring and the social and economic networks that prevailed in ancient small worlds. Members of SHARP were fortunate to be able to interview elder residents of Korphos, who described details of life in the village in the years during and before World War II, when there were no paved roads to Korphos and no motorized seacraft, yet the Saronic Gulf was teeming with social and economic activity. Lita Tzortzopoulou-Gregory conducted a program of interviews between May 2007 and June 2009, which I have mined for the observations that follow.¹⁰ Of particular relevance to the topic of this chapter are the relationships that the inhabitants of Korphos maintained with the inland village of Sophiko on the one hand, and the coasts and islands of the Saronic on the other.

Prior to the Second World War, Korphos was a fishing and seafaring village, with perhaps 90% of the male population engaged in fishing or merchant activities on the Saronic Gulf. Young boys learned by doing, taking to the boats at a young age to accompany their fathers and grandfathers on their rounds. The more ambitious or better connected aspired to be sea traders because there was good money in it. The fishermen were generally poor, as fish were plentiful and cheap throughout the Gulf. Their work provided subsistence and fish to exchange with farmers, shepherds, and forest workers for needed commodities. There were approximately 30 families living in Korphos, each owning at least one fishing boat or caique. As many as 60 rowboats, fishing boats, caiques, and small sailing boats were anchored at Korphos. Most of the boats were built at Perama on

Salamis island.

The consensus among the seagoing Korphiotes is that the Saronic is a relatively trouble-free body of water to navigate. They use the word *limni* (lake) to describe it, asserting that the winds and currents are not especially dangerous, and the shallows and other hazards are few. This is not to say that environmental conditions had little effect on voyages. One experienced seaman reported that the trip from Korphos to Aigina in a small sailing boat could take anywhere from three to seven hours, depending on the winds. On longer trips, the merchants would overnight at ports of call in their boats before setting off for home the next morning; they generally did not travel on the Saronic at night.

The fishermen worked in local waters and preferred the fishing ground between Kalamianos and the small island of Ayios Petros offshore. It was there that the shallow waters off Kalamianos gave way to the steep drop-off of the sea bed, known locally as the “chasm,” where the catch was plentiful. The fishermen rarely ventured more than a few kilometers from Korphos. In winter, fishing continued but kept close to shore. In addition to subsistence use, fish and seafood were transported by donkey to Sophiko, a trip of approximately one and a half hours by an old path that followed a stream bed west of town to the upland basins that open west to the interior Corinthia. One older woman remembers bartering for goods with Sophiko residents who did not have cash to pay for the fish.

Korphos was, in the early twentieth century, a *proti skala*, a major port in the Saronic trade, and this afforded the sea traders a more varied life, intimately connected with both inland producers and the merchants at ports and anchorages around the Saronic. Farmers and herders from Sophiko village owned most of the land in the hinterland of Korphos, and they engaged in several traditional pursuits. Farmers grew cereals, chiefly wheat but also barley, and tended olives, mainly for their own subsistence needs with the surplus traded in Korphos and elsewhere. Wheat and barley were also grown in the limited lowland basins, including the one directly above the Kalamianos site. Sheep and goat were herded in the upland areas and their primary and secondary products were offered in trade for maritime products and services. The most prevalent occupation in the upland zones around Korphos, however, was forest work. Wood, charcoal (mainly

from bushes and bush roots), and pine resin were harvested in this heavily forested region and brought on donkeys to Korphos for shipment abroad. The sea traders purchased these varied products and exported them to Saronic markets, either in their own boats or in larger ships they contracted for the purpose. It was not only at Korphos that these products were collected for shipment. Often, when a farmer's fields or trees were closer to one of the many tiny anchorages in the area, the produce would be brought down and picked up there. One resident reported that the sea traders often took advantage of the inland producers who were dependent on sea transport by bargaining for unfairly low prices.

There was not a single dominant port in the Saronic, but instead a handful of large, bustling nodes of maritime connectivity. Several interviewees recalled bringing wood, charcoal, resin, and manure to markets at Piraeus, Eleusis, Salamis, Aigina, Poros, Nea Epidaurus, and elsewhere. Frequently, a port town specialized in processing certain material or had high demand for specific products. At Eleusis there were factories processing resin, while charcoal and wood were in demand at all of the above-named ports. In exchange, the Korphiotes sought food and staples. From Aigina they imported flour and water jugs (even in modern times tempered with the volcanic inclusions that enhanced their performance), fruits and vegetables from Nea Epidaurus, and foodstuffs and water from Piraeus, among many other items. On returning to Korphos, the merchants brought their wares to Sophiko and sometimes beyond, where local buyers acquired them and distributed them further on. The forest industries have long since become economically unprofitable. There are few uses for charcoal,¹¹ and pine resin, once used in turpentine and other chemical products, has been superseded by synthetic substitutes, while the popularity of resinated wine has declined in recent years. A few farmers continue to harvest resin on a small scale.

Fresh water was and remains scarce in the village, and this was perhaps a strong incentive for Bronze Age people to settle at Kalamianos instead. Water was retrieved from coastal sites such as Nea Epidaurus, Kyra island, and occasionally Kenchreai. One informant describes four men regularly taking a four-meter-long rowboat to Nea Epidaurus to fill 150-kilogram barrels with water, taking turns rowing one and a half hours each way. Tiny Kyra island, several kilometers off Kalamianos, had a fine though not copious spring where fishermen would often fill up. In the years after World War II, small boats brought water daily from Piraeus or Salamis as

part of government programs. Fetching water by boat was a summer activity, since cisterns in the village filled amply with winter rains. Women and girls traveled by boat or donkey to Kalamianos to wash clothing in two brackish wells there.

Some of the more intrepid seafarers ventured outside the Saronic, one mentioning that he had sailed out to islands such as Siros, and along the eastern Peloponnesian coast. We might think of these as the modern counterparts of the “expert” sailors discussed in previous chapters. Many Korphiotes spent some part of their adult life in the merchant marine, aboard big ships engaged in international commerce. They all returned to the village and their families after several years at sea.

Kinship relations with Sophiko were close, and there was much intermarriage. People also found spouses in Aigina and Salamis; many Korphiotes emigrated to Salamis and Aigina after marriage. This is one demonstration that social imperatives such as maintaining genetic and demographic viability bound together coastal communities in a small world. Another example is that children from Korphos, Nea Epidauros, and other coastal villages were sent to Aigina for high school because these small communities could support nothing more than a one-room elementary school. The notion presented in [Chapter 5](#) that the landward limits of the coastscape were generally the passes and the first-encountered inland nodes finds support in the movements of the Korphiote merchants, as well as the fact that there was little interaction with Corinth before the modern road was built to join the Corinth–Epidauros coastal highway in the 1960s.

When prompted concerning the general orientation of the community, the informants were unanimous that the Korphiotes have always thought of themselves as an island people: they looked to the sea for their livelihood, wore island dress, listened to island music and danced island dances, and created networks of interaction with coastal and island people in the Saronic. They contrasted their outlook with that of the Sophikites, whom they considered inland, “mountain” people. That they nevertheless maintained close social and economic ties with Sophiko indicates the dual orientation of a maritime coastal community, and exemplifies the inland-coastal symbiosis that is an important feature of the dynamism of coastal life. Perhaps the coastal–inland symbiosis between Korphos and Sophiko in modern times is analogous to the relationship between Kalamianos and Stiri in the LBA. Several interviewees spoke of a pre-modern switchback walking

path from the lowland north of Kalamianos up the steep slope to Stiri, used to access the eleventh-century church of Panayia Stiris; thus, although the two sites seem mutually inaccessible, people on foot with their donkeys have managed to overcome an environmental obstacle to preserve connectivity in this microregion.

The Korphos–Sophiko system in the early modern period bears the stamp of a microregion in Horden and Purcell's terms, and Korphos emerges as a coastscape and a maritime coastal community. The people of Korphos forged the link between the terrestrial and maritime worlds and facilitated the exchange of desired commodities. The sea merchants truly occupied a position of centrality with respect to connectivity around the Saronic. Young boys were inculcated in the seafaring life and the essential knowledge was passed down within families, much as we have seen among South Pacific societies. In the first half of the twentieth century, the Saronic Gulf was a vibrant modern small world, with a proliferation of nodes on coasts and islands and innumerable crisscrossing paths connecting them.

What use are these oral histories to us as we contemplate life in the coastscapes of the Mycenaean period? With the customary caution against equating modern times with eras of the remote past, it is possible to suggest that the challenges and opportunities encountered by these two peoples inhabiting a Saronic small world bear many similarities. The traditional lifeways of early twentieth-century people and their Mycenaean counterparts in the Korphos region were not qualitatively dissimilar; they possessed comparable technologies of subsistence and seafaring. They lived at times of modest prosperity and vigorous interaction, when both were highly connected to spheres of interaction on land and sea. Much will have been different, of course; to name just one example, the structures of political power are not comparable. Nevertheless, the information we obtained from local residents tends to support the picture I have constructed from archaeological and ethnographic data, and therefore it seems appropriate to add it to the diverse strands of evidence bearing on the reconstruction of Mycenaean coastal worlds. The theoretical underpinnings of this position rest in a structure–contingency framework (Bintliff 1999; Tartaron 2005: 158–59): essentially, there are long-term structures, corresponding in *Annales* terms to the forces of the *longue durée* that influence the configuration of societies and their interactions with the world around them. Among the most important are the environment (including physical geology and geography, climate, and resources) and the human subsistence

technologies (agropastoral, maritime) and other adaptive mechanisms (culture) that allow populations to survive and sometimes thrive over time. By establishing structural similarities between two societies or periods, it is acceptable to take the comparisons further, but this may not be done by ignoring the differences, which may reside already in the structural realm but are most salient in medium-term political and economic patterns (*conjonctures*) and in decisive events (*événements*). It is in the interplay of long-term forces with shorter temporal and smaller spatial contexts that historical contingency arises, giving each locality and community a unique history. My contention is not that we can simply equate the Korphiotes of the early twentieth century with their counterparts at Kalamianos in the LBA. Rather, given key structural similarities of environment, technology, and location in the Saronic Gulf, their respective engagements and worldviews on facing the sea – their connectivity and interaction patterns – may also share important parallels, at least hypothetically as we await future phases of investigation.

Discussion

When considered in terms of a maritime cultural landscape framework, we observe the fluctuation of the Bronze Age Saronic maritime small world between cohesion and fragmentation, as demographic patterns and external opportunities drew Aigina's attention into and away from the Gulf. The hegemony of Aigina in this small world, at least economically, seems to have begun already in the later Neolithic. From there, the Saronic maritime small world developed steadily to a peak in EH II, collapsed from EH III to MH III, revived in the Shaft Grave Era to reach a second peak in LH I–II, until finally (though gradually) Mycenae usurped Kolonna's traditional role. For the coastal communities dotting the coasts and islands of the Saronic Gulf, this transformation entailed not only a new master, but new cultural material and practices, and a reorientation of maritime relations and connections. In effecting this transformation, Mycenae broke apart the old Saronic world and incorporated the region into a larger world of land and sea connections.

I hope to have made a few central points in this extended case study by interweaving the stories of Kolonna and Kalamianos, ones that can be applied usefully to other cases. The Saronic was susceptible to the emergence of maritime small worlds because visual contact, relative ease of movement by sea, and moderate distances facilitated connectivity and the experiential sense of a coherent world. Taking a

bottom-up perspective, we can propose that this is important because most Mycenaeans lived and died mostly or wholly within these small-scale settings. For more than a millennium, Kolonna, with a fortunate location and important natural resources, established itself as a center interacting with small peripheral settlements in the Saronic as well as more distant trading partners. But precisely because small worlds are nested in larger-scale spheres of influence and respond to the consequences of external developments, they are prone to change over time. The Middle Helladic hiatus shows that, as Horden and Purcell emphasized, social forces often trump environmental imperatives; we cannot simply map maritime relations according to currents, winds, and distances.

By following Kolonna and Kalamianos, we see the Saronic small world responding both to internal dynamics and to shifting centers of power and demographic trends played out beyond the Saronic. Kalamianos became prominent only in periods of strong supra-local connectivity: EH II with its nucleation of population and strong maritime orientation, and LH III with the incorporation of large territories by the Mycenaean palaces. In each case, the harbor at Kalamianos and its hinterland were developed to articulate with economic and political systems of greater scope than the Saronic. If we break down these broad patterns, we could write a different history for each coastscape, reflecting varied effects of, and responses to, dynamics both internal and external to the Saronic. The story of Kalamianos is different from those of Megali Magoula, Kiapha Thiti, or the Salaminian settlements at Kanakia and Sklavos, nuancing but not diminishing the validity of the broad diachronic and spatial patterns. The same dynamism pertains to the shape and extent of the regional/intracultural sphere over time. The changing distribution of Aiginetan pottery (excepting rare distant outliers) is a useful measure of Kolonna's regional sphere of interaction in a given phase (Fig. 7.7).

Tracking the long-term history of the Saronic leads to the realization that Kolonna and Mycenae exercised very different styles of center-periphery leadership. The evidence from Kalamianos and other sites suggests that when the Mycenaeans infiltrated the western shores of the Saronic, they colonized, built massively, developed local economies, and in some cases extended a measure of political control. By comparison, the Saronic small world of the Aiginetans seems decidedly underdeveloped. Certainly, Kolonna exercised economic hegemony, benefiting from control over trade in the Saronic and

extending its export networks to the nearby mainland and islands. Yet one looks in vain for sites with monumental Aiginetan-style architecture, or other signs of intensive political or economic development of the Saronic. As such, the coastscapes of the Saronic were not exactly like the *peraia* of later times (Constantakopoulou 2007; Horden and Purcell 2000: 133), because the elements of political control and direct economic exploitation from the island state that seem to have been essential in the Classical period were lacking.

In attempting to understand the coastscape at Kalamianos and its role in the Saronic small world, the ability to reconstruct the Bronze Age coastline was decisive, and this will be true also in the two brief case studies to which I now turn.

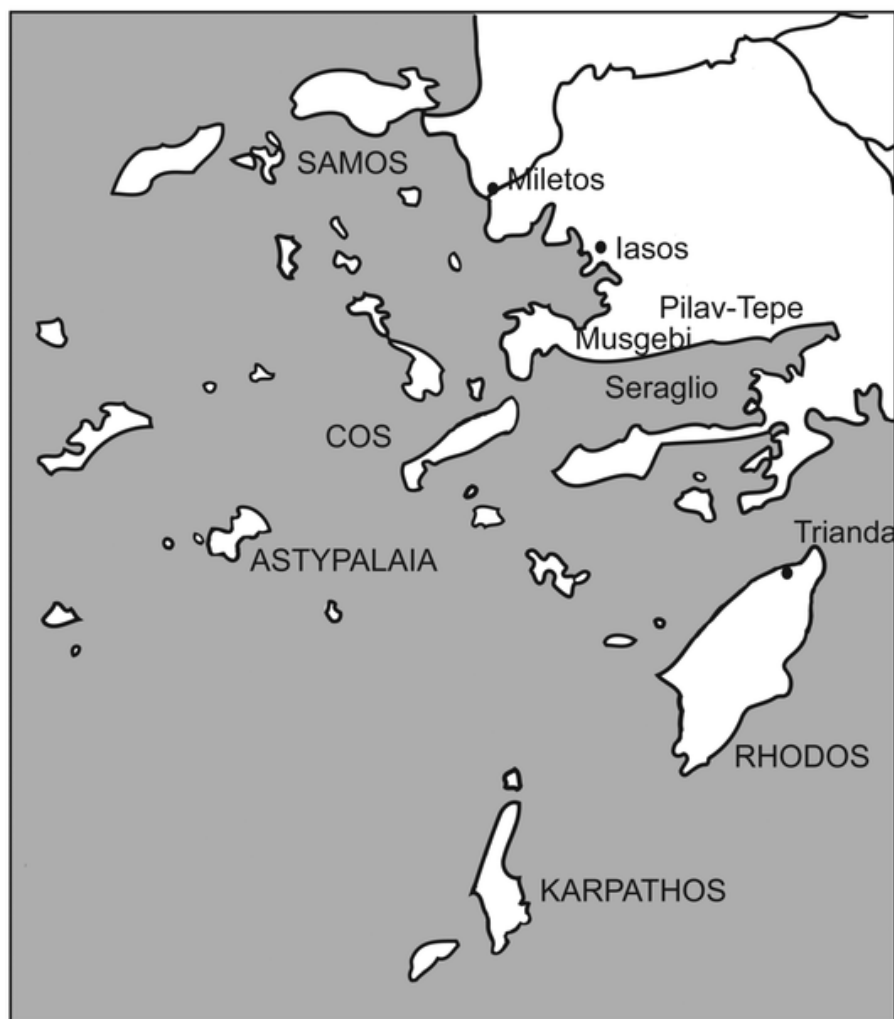
Potential Coastscapes and Small Worlds: Miletos and Dimini

In this concluding section, I offer brief outlines of two additional places where there is high potential for identification of coastscapes and small worlds. These observations on Miletos and the Latmian Gulf, and Dimini and the Bay of Volos, are not detailed analyses, but rather explorations of ways that a maritime cultural landscape perspective might be illuminating in understanding the Mycenaean-period activity in these coastal settings. The main principle guiding the selection was that reasonable amounts of both archaeological and paleocoastal information should exist.

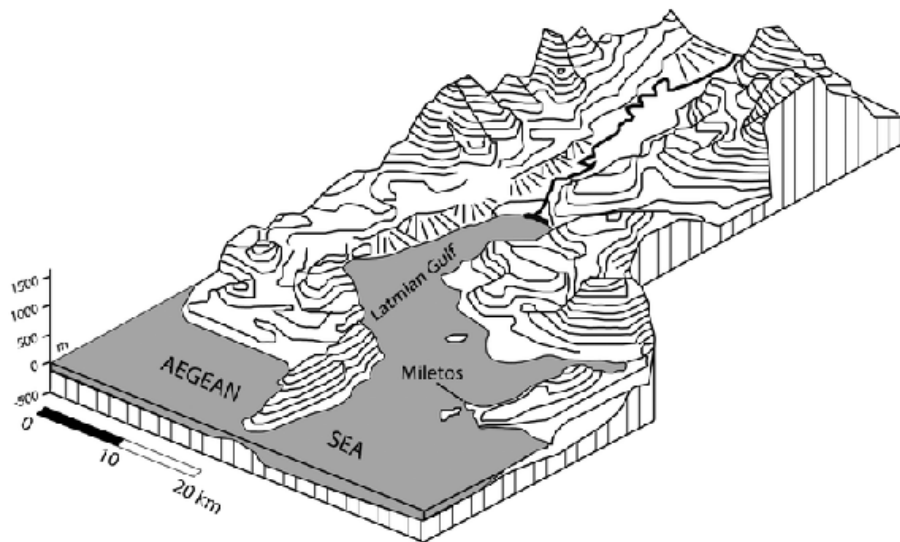
Miletos and the Latmian Gulf

The former Latmian Gulf (now virtually closed) is a striking example of a deep marine embayment created by flooding of a low-lying coastal shelf during the pan-Mediterranean Holocene marine transgression (Figs. 7.28, 7.29). At the peak of the transgression circa 6000 to 5000 BP, the gulf may have extended 40 to 50 kilometers inland, but there is some evidence that relative sea level was actually highest circa 2500 BC (Bay and Schröder n.d.; Brückner 2003; Herda et al. 2009; Knipping et al. 2008; Müllenhoff et al. 2005). At the termination of the marine transgression, the process of infilling of the gulf by delta progradation of the Maeander (Menderes) River began, assisted by the instability of the natural Mediterranean environment and augmented by variable long-term human impacts. A German geoarchaeological team placed more than 100 sediment cores in the

Maeander floodplain in order to reconstruct the advancing coastline in the context of human activity (e.g., Brückner 2003: 121–27). Using methods similar to those described in Chapter 5, they relied mainly on macro- and microfaunal analysis to determine diverse environments of deposition (marine, littoral, lacustrine, terrestrial). Radiocarbon dating of organic material furnished a chronological framework, which was supplemented by archaeological and historical information.

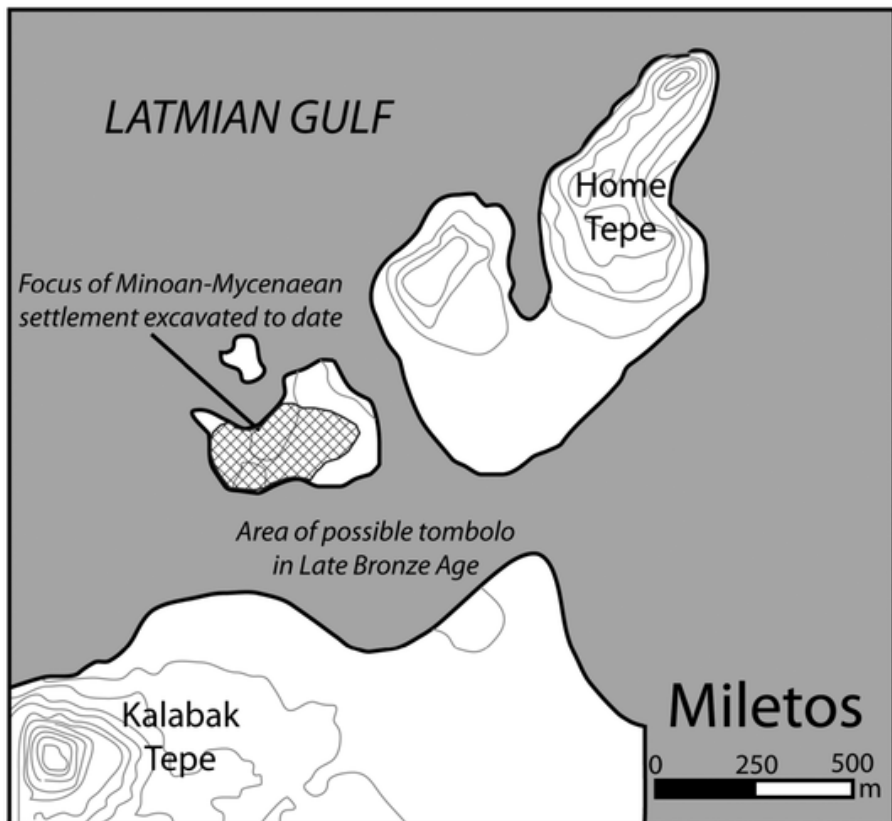


7.28 Map of the southeastern Aegean and southwestern Anatolian coast. Drawing by Felice Ford.



7.29 Three-dimensional map of the Latmian Gulf at maximum marine transgression, circa 4000 BP. After Bay and Schröder n.d., fig 3.

The progradation of the shoreline toward the Aegean was gradual through the Bronze Age, though a modest increase in sediment load can be attributed to the erosional effects of expanded goat herding in the second millennium BC (Knipping et al. 2008: 368, table 1). A rapid and massive increase in the rate of sedimentation occurred only in the first millennium BC (Bay and Schröder n.d., figs. 4, 5). During the Mycenaean period, the gulf still penetrated some 30 kilometers inland, and the promontory of Miletos consisted of two main islands, one formed by Home Tepe and Kale Tepe and the other the area of the later temple of Athena, which may or may not have been connected to the mainland by a tombolo (Brückner 2003: 129–30); in short, Miletos was part of an archipelago-like coastal landscape facing onto a still-vast Latmian Gulf (Fig. 7.30).¹² All around the islands and coastal areas there will have been natural anchorages and small coastal plains suitable for habitation. The climate was favorable, with moderate temperatures and adequate rainfall to support agriculture. Other natural resources such as timber and building stone were plentiful (Greaves 2002: 8–16). The Maeander valley was also a communication corridor connecting the sea with east–west land routes to the interior. Along those routes metals and other products from the interior of Anatolia may have been passed along to the Aegean (Greaves 2002: 32–37).



7.30 Map showing the topography of Bronze Age Miletos and vicinity. After Brückner [2003](#): 128, fig. 3.

Sporadic German excavations since the beginning of the twentieth century have demonstrated that the LBA at Miletos witnessed first intensive Minoan, then Mycenaean, influence (Niemeier [1998](#), [2005](#)). Early excavations established three LBA “building periods,” essentially confirmed by more recent campaigns. The first building period corresponds to Minoan presence in Miletos phase IV, succeeded by Mycenaean in the second (Miletos V) and third (Miletos VI) building phases.

Miletos V encompasses pottery phases LH IIIA1–2, from the late fifteenth to the end of the fourteenth century. Wolf-Dietrich Niemeier ([1998](#), [2003](#), [2005](#)) makes a strong case that in the second building period, there already was a Mycenaean colony at Miletos. The architectural remains are meager, and two rectilinear buildings in the Athena temple area may or may not show Mycenaean influence (Niemeier [1998](#): 30–31). But in other ways, the settlement is overwhelmingly Mycenaean. The pottery – including painted

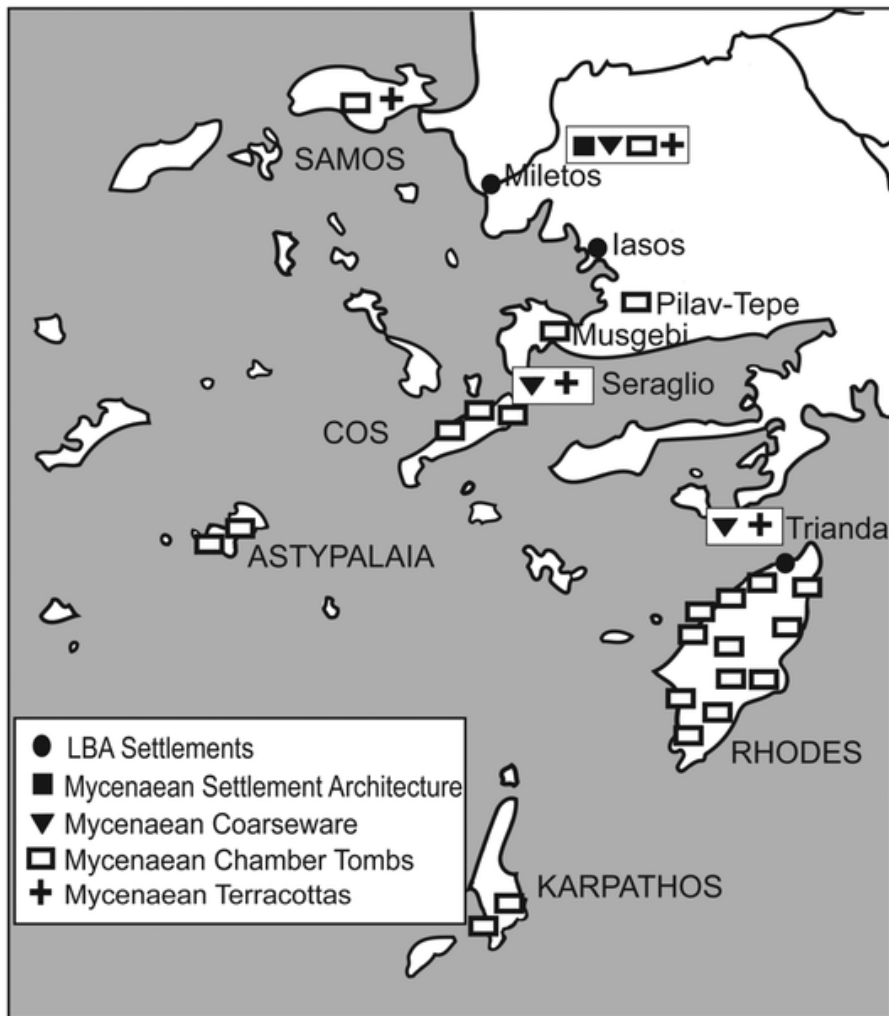
fineware, unpainted, and domestic coarseware – is predominantly Mycenaean with virtually no indigenous Anatolian types. Seven kilns from this period are known, including mainland Greek and Cretan types, establishing Miletos as an important center of pottery production (Niemeier 1999). Slight evidence exists for cult activity in the form of a terracotta phi-type figurine (Niemeier 1998: 33). No cemetery associated with the settlement is known. The second building period ended in a destruction dated by pottery to the LH IIIA2/IIIB1 transition, which has been linked to the Hittite conquest of Millawanda circa 1315 BC (Niemeier 1998: 38). As we have seen, scholarly opinion increasingly endorses the equations Ahhiyawa = Mycenaean Greeks and Millawanda = Miletos. Millawanda was a foothold for the kingdom of Ahhiyawa on the western coast of Asia Minor, and Miletos is far and away the most likely candidate for Millawanda, linguistically and archaeologically.

After the destruction of Miletos V and possible control by the Hittites for some period of time, the settlement regained its Mycenaean character in the thirteenth century. The third building period, Miletos VI, has yielded LH IIIB–LH IIIC pottery in large quantities, much of it locally made. Although the architectural remains have been mostly obliterated by later construction, one corridor-type building similar to thirteenth-century examples at Mycenaean mainland centers is partially preserved. A cemetery at De irmentepe, 1.5 kilometers southwest of the Athena temple, can now be associated with Miletos VI. It includes 11 chamber tombs of canonical Mycenaean type, containing LH IIIB–IIIC pottery and Mycenaean weapons and jewelry. The evidence of cult and administration is again slight: a psi-type figurine and two pithos sherds of local manufacture that may have Linear B signs incised on them (Niemeier 1998: 36–37). The date of the final destruction of Miletos VI has been ambiguous, but the last Mycenaean pottery has recently been placed in transitional LH IIIB/LH IIIC Early or LH IIIC Early, which by comparison with material at Ugarit suggests a date in the neighborhood of 1185 BC, at the time of general unrest in the eastern Mediterranean (Mountjoy 2004).

Miletos was unquestionably the most important Mycenaean settlement on the coast of Asia Minor, and there are similarities in its position within the Latmian Gulf to Kolonna's status in the Saronic Gulf at an earlier time. The scale of the two bodies of water is comparable, and the role of intervisibility among the coastal settlements must have been equally important in creating a Latmian

maritime small world with numerous coastscapes engaged in dense webs of interactions. Like the Saronic Gulf, the Latmian Gulf is an ideally circumscribed body of water with which to pursue a study of interaction networks at small to medium scale. A similar sentiment is expressed by Nicoletta Momigliano, based on her study of material from Iasos. She characterizes Iasos in the early LBA as a community open to maritime traffic and exchange, but acting only within a regional sphere of interaction in the Aegean; most of the pottery is of Anatolian type while actual imports from Crete, the Cyclades, the Dodecanese, and further afield are rare (Momigliano 2005). She stresses that we should pay more attention to smaller-scale exchange networks and cabotage as the chief mechanism of moving material. (Of course, this is a fundamental theme for Horden and Purcell, and for the present work.) If sites like Miletos, Trianda, and Seraglio were the emporia of the LBA, Iasos is more representative of the kind of settlement we would expect to find at good anchorages on the shores of the Latmian Gulf.

It is possible to also think about larger-scale interaction spheres into which Miletos was incorporated, thanks to a protracted dialogue among archaeologists, philologists, and historians about the nature and intensity of interactions between the Mycenaean and the inhabitants of Anatolia's western coast. Long ago, it was noticed that, roughly speaking, the regions south of the Mykale peninsula (i.e., the northern promontory of the Maeander valley) possess a much richer record of contact with the Mycenaean world than those to the north, not only in the quantity of items but also in the presence of material categories that are deemed to reflect actual settlement or some form of engagement well beyond simple trade or episodic visits (e.g., cult objects, burial practices, domestic pottery; Fig. 7.31). The patterns are relatively uncontroversial, but some see colonies or other forms of permanent presence, while others see selective adoption or acculturation. (Compare Mountjoy 1998 and Niemeier 2005 for a sampling of the debate.)



7.31 Mycenaean elements in the southeastern Aegean. Drawing by Felice Ford, after Niemeier 2003: 103, fig. 1.

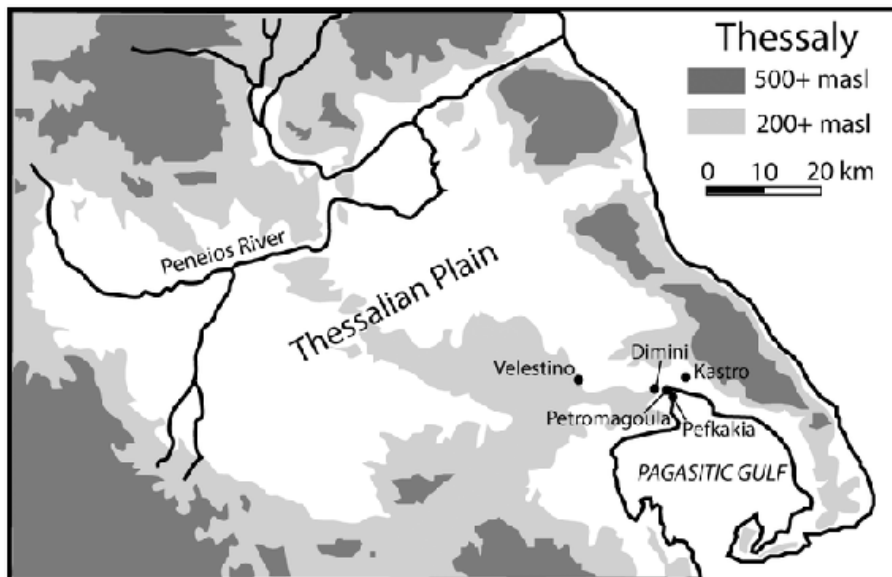
We need not get bogged down in these issues to make the simple suggestion that the zone south of Mykale, termed by Mountjoy (1998: 33, fig. 1) the “Lower East Aegean–West Anatolian Interface,” should correspond to the regional/intracultural maritime interaction sphere (see Table 6.1) in which Miletos operated. Mountjoy (1998: 47–51) proposes that this Lower Interface is the kingdom of Ahhiyawa itself. This is another, much more complex, debate beyond the scope of the present discussion (see Niemeier 1998, 2003 for the view that the kingdom of Ahhiyawa must be on the Greek mainland), but certainly the Lower Interface roughly demarcates the network in which familiar cultural materials and information moved with relative ease by sea. In LH IIIC, this zone became the core of the “East Aegean Koine”

(excepting Rhodes: Mountjoy 1998: 52–63). For a Mycenaean crew departing Miletos, voyaging beyond the Lower Interface into the Central and Upper Interfaces might have been tantamount to a cross-cultural adventure, though perhaps not particularly daunting to an experienced sailor.

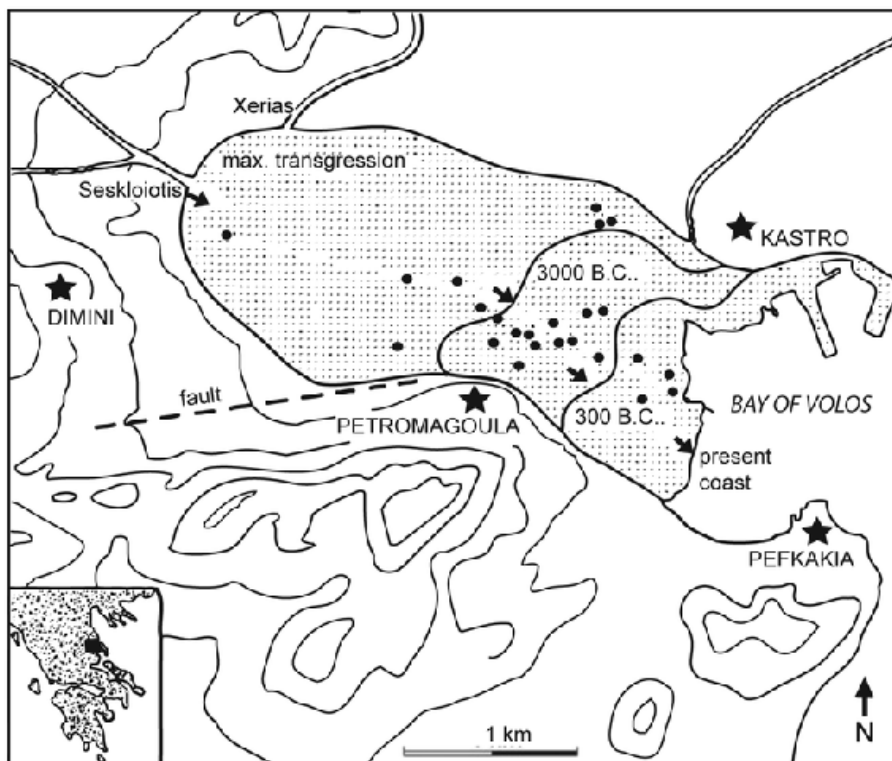
It is difficult to say, in my ignorance of the area, whether a targeted archaeological prospection of the former Latmian Gulf, taking as its starting point the excellent geoarchaeological work, might succeed in populating the LBA small world. Some survey work has been done, but mostly in the vicinity of Miletos itself (Lohmann 1995, 1997, 1999) and mainly with an interest in the historical periods (but see Marchese 1986). Colluvial and alluvial deposits will have buried many early sites (Greaves 2002: 40), but it is also true that Mycenaean artifacts are found on hills and in the hinterland away from Miletos, not restricted to the coast as in the period of Minoan presence (Greaves 2002: 56). It may be interesting to attempt an investigation of some part of the lower Maeander valley from a Maritime Cultural Landscape perspective.

Dimini and the Bay of Volos

The Bay of Volos, on the Aegean coast of Thessaly, presents another attractive setting for Mycenaean coastal activity (Fig. 7.32). Well sheltered by its position deep within the Pagasitic Gulf, the bay was the gateway from the sea to the rich Thessalian plain, already the destination of the earliest agropastoralists of the Greek Neolithic. Paleocoastal reconstruction of the bay shows that following the maximum marine transgression circa 6000 BP, at which time the sea penetrated three kilometers inland of its modern position, a series of human impacts and natural sedimentation processes caused the shore to prograde rapidly, so that by the EBA, the coastline had moved 1.5 to 2.0 kilometers seaward (Fig. 7.33; Zangger 1991). The location of the shoreline in the LBA is not known precisely, but it likely averaged two kilometers from the maximum marine transgression, or a little more than one kilometer inland from the modern coast. In addition to abundant arable and pasture land nearby, coastal dwellers could exploit marine resources and trade for timber and other forest products from the Pindos mountains.



7.32 Area map of Thessaly, with important Neolithic and Bronze Age sites indicated. After Andreou et al. 2001: 261, fig. 1.



7.33 Map of the changing coastline of the Bay of Volos. Drawing by Felice Ford, after Zangger 1991: 3, fig. 1.

Ringing the LBA Bay of Volos were a small number of large, nucleated settlements, most prominently Dimini, Kastro (Volos), and Pefkakia. By that time, Dimini was a little more than 2.5 kilometers from the bay, but Kastro and Pefkakia had always been and remained coastal sites. Each of these sites was inhabited through much of the Bronze Age, rarely with a hiatus or a shift in settlement location. Intrasite complexity was well established at the beginning of the Mycenaean palatial period, expressed in the construction of LH II–IIIA tholos tombs near Dimini and Kastro, and built chamber tombs at Pefkakia.¹³ Thus, by LH IIIA, one group in society built monumental structures and buried their dead in monumental tombs, while others lived and died more simply. All three sites suffered major destructions at the end of LH IIIB2; Dimini was reoccupied on a small scale in the beginning of LH IIIC, but by the end of LH IIIC Early was abandoned. Only Kastro persisted through LH IIIC and into Protogeometric and Geometric times (Batziou-Efstathiou 2003).

Thessaly is usually considered a periphery of the Mycenaean world, in spite of a large number of sites, both on the coast and in the interior, that were heavily Mycenaeanized. Bryan Feuer (1983, 1994, 1999, 2003) has modeled Thessaly as a periphery exhibiting decreasing integration with the Mycenaean world as one moves from the coast to the interior, in three zones that he terms the “inner border” (i.e., the coastal zone), the “outer border,” and the “frontier” (e.g., Feuer 1999: fig. 5). Based on this pattern, Nikolas Papadimitriou (2008) characterizes Thessaly as both center and periphery. Adrimi-Sismani (2007) argues, however, that the entire region should be considered a fully integrated part of the Mycenaean world, having in common with it settlement patterns, intrasite settlement structure, tomb types, cult practices, pottery and other material culture, and a similar historical trajectory. For the coastal area, at least, this claim has merit and continuing discoveries tend to support it.

Much of Adrimi-Sismani's case rests on her excavations at the remarkable site of Dimini. She has touted Dimini as a Mycenaean palace center, probably the Iolkos of Homer and the saga of Jason and the Argonauts (Adrimi-Sismani 2006, 2007). Excavations from 1977 to 1997 revealed a Mycenaean settlement of around 10 hectares founded east of the Neolithic mound at the end of the fifteenth century (Adrimi-Sismani 1994, 1999, 2006, 2007). The site has two main architectural phases, in LH IIIA and LH IIIB. The later (thirteenth-century) settlement was divided into an eastern and a western zone by a wide road running north–south (Fig. 7.34). The western zone was an

elite, or at least public, sector segregated from humbler domestic dwellings east of the road. The western sector centered on Megaron A and Megaron B, two large megaron-style corridor buildings, defined by Panagiotia Pantou (2011: 39) as structures that comprise "...a megaron-type unit flanked on one side by a long corridor and a series of smaller rooms (secondary wing)." These buildings were constructed of rubble stone foundations and mudbrick superstructures. A monumental gateway with three axial columns gave access to a forecourt and then to a peristyle courtyard before the megaron unit could be reached in Megaron A. In the series of small rooms to the south, separated from the megaron unit by a long corridor, evidence was found of food storage and preparation, as well as tools for potting and jewelry manufacture. Here too was found a fragment of a stone weight with a Linear B inscription (Adrimi-Sismani 2007: fig. 15.4). Megaron B was even more interesting, with plentiful evidence for cult activity and feasting (Adrim-Sismani 2007: 165). In the middle of the vestibule at the eastern end of the megaron unit lay an H-shaped altar of clay attached to an elliptical platform and two perforated, triangular mudbricks. A painted mug found in situ in front of the altar suggests the pouring of libations. In three small attached rooms to the south, cups holding the remains of animal bones were recovered. Outside the southern entrance to the large western room of the megaron unit, 16 small Mycenaean clay figurines were found next to a large limestone slab with cavities, suggesting a function as a *kernos* for the placement of cult offerings. The northern auxiliary wing contained many storage, cooking, and serving vessels, and just outside the building middens of animal and fish bones, seashells, and broken pottery may be the refuse of feasts. The two large rooms of the megaron unit were found nearly empty, but considering their size and the finds from adjacent areas, they may have been locations for communal eating and drinking, cult ceremonies, and other kinds of public gatherings (Pantou 2010: 386–87). The evidence from Dimini indicates the existence of an intrasite social hierarchy with two tiers: an elite ruling and priestly caste living in the western sector and burying their dead in two tholos tombs at the site, and a larger group of commoners engaged in agropastoral and craft occupations and burying their dead in modest cist graves (Pantou 2010: 389). Adrimi-Sismani (2007: 167) labels Dimini a palace center and the controlling hub of a regional hierarchy in which Dimini "...combines all the features of an administrative, financial, and religious center, and consequently it is the only settlement in Thessaly that clearly displays organization and social elements...of a true center."



7.34 Architectural plan of LBA Dimini. Drawing by Felice Ford, after Pantou (2010: 388, fig. 5).

Leaving aside Dimini's possible mythical connections, not all accept the designation of the Megaron A/Megaron B complex as palatial, or of Dimini as a regionally dominant center. In a thorough and methodical reassessment of the archaeological evidence in the Volos region, Pantou (2010, 2011) has challenged many of Adrimi-Sismani's interpretations. Her disagreements fall in two main areas. First, she asserts that the “palace” at Dimini is not palatial. Although the plans (corridor buildings with megaron units, storage, industrial, and cult areas) and some of the activities (e.g., feasting, cult) carried out in Megara A and B emulate those of the Mycenaean palaces, the materials used (stone socle and mudbrick superstructure), the modest elaboration (e.g., simple plastered floor and walls with some painted colors but no frescoes, no ashlar blocks), and the size (falling into Pascal Darcque's [2005] intermediate, not palatial, category) fall far short of their counterparts at Mycenae, Tiryns, Pylos, and elsewhere. Further, the discovery of part of a stone weight with a Linear B inscription does not constitute evidence for “...the presence of an accounting system that monitored the movement of products manufactured in the complex” (Adrimi-Sismani 2007: 168).

Second, Dimini was perhaps not the “administrative, financial, and religious center” of the Volos region. Pantou (2010: 383) finds striking similarities in architecture, burial types, and material culture among the settlements at Dimini, Kastro, and Pefkakia. For example, only

minor differences in elaboration and grave furnishings exist when one compares tholoi with tholoi and cist graves with cist graves across the region. A two-tiered social hierarchy of ruling elites and commoners existed at each site, manifest in contrasts of architectural elaboration and burial monuments, but in Pantou's view this did not extend to a regional hierarchy (an opinion already expressed by Andreou et al. 2001: 272–73). Instead, she envisions a stable socioeconomic environment with a heterarchical rather than hierarchical relationship among the sites. Dimini, Kastro, and Pefkakia were independent communities with their own internal hierarchies, but with regard to one another display overlapping, redundant features and functions. The settlements are three to five kilometers apart, intervisible, and unfortified. They lack smaller satellite settlements. In this the Volos region differs from the inland settlement pattern (the Lake Karla region, Almyros Plain, and Pharsala region), where large settlements are surrounded by satellites, probably small agricultural or pastoral settlements (Adrimi-Sismani 2007: 171–74). The contrast must partly reflect a stronger orientation toward maritime and industrial pursuits at the coast, but Pantou (2010: 386) does caution that systematic, intensive surveys are needed to be sure that small sites have not been missed.

If Pantou's reconstruction of the Volos area without a central-place hierarchy is correct, it may be similar to the situation in the northern Corinthian plain, where Pullen and I have argued for long-term social and economic stability in a heterarchical arrangement of settlements (e.g., Gonia, Perdikaria, Korakou) spaced at regular intervals and exploiting similar resources in a generous environment (Pullen and Tartaron 2007; Pantou [2010: 394] notes the similarity herself). Such a stable milieu may in fact inhibit the emergence of an overarching palace center (Haggis 2002; Pullen and Tartaron 2007: 148). This is in contrast to the Saronic Gulf: although Aiginetan dominance was politically underdeveloped, Kolonna was nevertheless the undisputed central place settlement and economic power driving the maritime small world for a millennium. The Mycenaean features in the Volos region might be explained primarily by acculturation, since there is strong evidence of connections with southern Greece already in the MBA. The reader will recall Maran's argument that by MH II, potters in coastal Thessaly were emulating the shapes and decorative schemes of matt-painted Aiginetan pottery (his “Magnesia polychrome”), and from there the influences traveled along with Thessalian products to the northeastern Aegean islands in MH and early LH (Cultraro 2005; Maran 2007). By the time the Mycenaean palaces emerged in the Peloponnese and Boeotia, an elite familiar with southern materials

and practices was in place and eager for practical and symbolic markers of power (Adrimi-Sismani 2010).

These observations help us to better define coastscapes and small worlds in the Volos region and beyond. The Bay of Volos may comprise a series of coastscapes within a small world defined by the Pagasitic Gulf. To the south, the Almyros plain and the western and southern coasts of the Pagasitic Gulf have produced several LH sites and five small tholos tombs in the Pteleos area, despite patchy investigation (Adrimi-Sismani 2007: 173). Even less information is available about the Gulf's eastern promontory. It remains likely, however, that the Bay of Volos, with three major, independent settlements, was the main port area for the Pagasitic Gulf, and Pefkakia may have served as the principal harbor. Heterarchy does not mean simply the absence of hierarchy, however, but the possibility of shifting hierarchies and nonhierarchical configurations over time. Thus, in the Volos region we see that the main settlement at Dimini suffered a hiatus between EH III and MH II; Pefkakia was particularly prosperous and outward looking in the EBA and MBA; tholos tomb use continued in LH IIIB only at Dimini; and only Kastro survived beyond LH IIIC Early. With these and many more observations on individual site histories we can tease out the subtleties of their interrelationships over time.

Casting an eye beyond the Gulf to the regional scale, the early interactions with the nearby Sporades and the northern Aegean islands as far as Lemnos trace out one part of the regional interaction sphere. Another obvious and important maritime route ran south into the narrow Euboean Gulf, the safer side of Euboea for navigation, giving access to Attica, the Cyclades, and farther on the Saronic Gulf and the eastern Peloponnese. The North Euboean Gulf, with many coastal Mycenaean sites, was surely another small world that would reward investigation (Crielaard 2006; Kramer-Hajos 2008; Nikolopoulos 2003; Van de Moortel and Zahou 2005).

Placing an area like the Bay of Volos in a maritime cultural landscape framework may be simply a matter of posing the question from that point of view. One could systematically gather information on the exploitation of marine resources (e.g., fish and shellfish at Dimini), the physical traces of harbor activities at Pefkakia, the evidence of extralocal contacts in the material culture assemblages (e.g., Aiginetan influence on the MBA pottery repertoire; a Canaanite amphora at Dimini), and compare these across the sites. Were the

intervisible communities at Dimini, Kastro, and Pefkakia acting in concert in connecting to networks within and beyond the Pagasitic Gulf, or were they acting independently? Was Pefkakia the main harbor for all three? Returning to the question of surface survey coverage in the region, Pantou (2010: 386) doubts that we understand the nature and degree of integration of the coastal area with the interior because there have not been systematic, intensive surveys. How much would such a survey change the picture we now have of large, solitary coastal settlements articulating with very differently organized habitation and production in the interior? How much could systematic survey add to the more “empty” eastern and western land masses enclosing the Pagasitic Gulf, and how would that change our reconstruction of coastscapes and maritime small worlds in the area? The Pagasitic Gulf is a fascinating case study in the extension of Mycenaean influence along maritime routes, and despite a spate of new discoveries and the extraordinary work at sites like Dimini, there is much more that could be learned with problem-oriented research on maritime networks at the local and small-regional scale.

Conclusion

The aim in presenting one detailed and two brief case studies of Mycenaean maritime worlds has been not only to demonstrate a particular approach, but also to try to convince the reader that this approach offers the possibility of alternative histories that are truly meaningful because they reveal details about the fabric of Mycenaean life as experienced by most coastal and near-coastal dwellers. The scale of analysis appears to be justified because to a surprising extent, each region in the Mycenaean world was unique, due to the varied environmental and historical conditions that are expressed in the structure and contingency of the long-, medium-, and short-term processes of *annales* history. Just how striking these contrasts can be is shown in a brief comparative analysis of seven Bronze Age “settlement regions” on or near the North Euboean Gulf by Margaretha Kramer-Hajos (2008: 114–17). Despite being contiguous and occupying a relatively small part of Greece, they exhibit sharp differences in political organization, site types and locations, burial practices, monumental works, and other social and cultural characteristics. Surely this result validates the microregional framework of Horden and Purcell, and the focus of this book on the local and microregional scale. Nevertheless, we must not lose sight of the bigger picture: the results of the analysis of coastscapes and small worlds form the robust data sets that can make big-picture and cross-cultural studies more

than “cherry picking” from trait lists for superficial similarities and differences (Tartaron 2008: 134, 2010).

In the concluding chapter, I shall restate the main points of the study, and discuss prospects for future research along the same lines.

Eight Conclusions and Prospects

In this brief concluding chapter I revisit a few central topics and offer some thoughts on where the approach advocated in this book might take us in the future.

A Conceptual Reorientation

During my twenty years of archaeological research in coastal areas of Greece, I have repeatedly confronted a disconnect between the usual narratives of Mycenaean maritime connectivity, focused on long-distance exchange and elite cargoes, and the lives I imagined for people living in the small coastal sites I often encountered in survey. Others had identified the same problem, albeit using different approaches. Horden and Purcell's (2000) attempt to write a history of the Mediterranean from the point of view of microregions and short-distance connectivity was an eye-opening inspiration, as was Broodbank's (2000) network analysis of small maritime worlds in the Cycladic islands. A group of archaeologists, among them Broodbank, Rainbird (2007), and Berg (2010), identified another problem in the segregation of land from sea, both conceptually and in fieldwork. As Berg (2010: 19) points out, the interest of continental and island surveys has generally stopped at the water's edge. To some extent, this problem arises because the sea-land divide is formalized in Greece by an administrative structure that places sea and land in the purview of two entirely separate authorities, with the result that permits to work on land do not extend to the sea and vice versa. Yet there is no intellectual justification for upholding this division. Islands are not in fact isolated "laboratories" of cultural evolution, and the sea is not a flat and featureless "liquid plain" serving only as connective *space*, but rather it is a textured, richly humanized *place* permeated by opportunity and danger, and animated by daily activity and maritime lore. Land and sea are not experienced separately in coastal regions, so our studies should not compartmentalize them either.

To the extent that I have any evangelical agenda in this study, it is to advocate for a shift in scholarly attention to the local scale of

coastscales and small worlds. Many of the arguments for shifting focus to the local scale have already been made convincingly. Horden and Purcell (2000: 123) regard microregions as the basic units of connectivity that may coalesce in larger and larger aggregates that effectively cross-cut environmental zones and geographical scales, while Broodbank showed that even in the modest expanse of the Cycladic islands, a non-uniform and fluctuating pattern of local-scale maritime interactions over time distinctly affected the overall configuration of connectivity in the island chain in the EBA. A fundamental argument in the present work is that the interactions of daily life and travel occurred overwhelmingly at close range, yet the excessive attention to long-distance maritime networks has created gaps in knowledge of the local scale. As an antidote, the coastscape is offered not as a periphery or as a boundary between land and sea, but as a uniquely central and integrative place articulating terrestrial and maritime worlds. If we wish to characterize life for the vast majority of coastal dwellers in the Mycenaean period, coastscales and small worlds are appropriate units of analysis.

Coastscales and small worlds are no more isolates than are islands. Like the microregions of Horden and Purcell, they coalesce and fragment, form larger aggregates by joining other small worlds, and then devolve once again into local entities. They are routinely affected or even transformed by external influences and events: the Saronic Gulf small world was profoundly affected first by the mysterious Middle Helladic hiatus, and later by the successive influences of the Minoans and the Mycenaeans. This multiscale dynamism is a strong indication that a renewed interest in local-scale entities should not be misunderstood as a return to historical particularism. Moreover, robust data from local and regional scales safeguards against superficial characterizations when we attempt to write larger narratives of the Mycenaean world or the eastern Mediterranean, or mine the data for cross-cultural comparisons.

A Conceptual and Methodological Toolkit

It is not a simple matter to “find” a coastscape or a small world. We generally do not know where Bronze Age anchorages were: sites and anchorages may be lost to coastal processes, and there is no evidence as yet that Mycenaeans built durable harbor structures that might aid in identification. The Linear B tablets tell us very little about coastal and maritime activity, and the LBA is too remote from Homer to hope that we can learn much from the epic poems. There is no surviving

hull material from a Mycenaean boat, and the artistic representations depict a narrow range of seagoing vessels or are difficult to interpret.

These problems present theoretical and methodological challenges. It is first essential to recognize that coastscapes and small worlds are theoretical constructs devised by archaeologists to bring order to a world they know only dimly from fragmentary evidence. They have no empirical reality independent of our typological frameworks; thus, we *designate* coastscapes and small worlds, we do not *discover* or *recognize* them. The framework presented in Table 6.1 is a set of models that simplify and order spatial data in an attempt to illuminate the operation of maritime networks at contrasting scales. The difficulty I encountered in trying to define the geographical scales and their attributes reflects the complexity of human spheres of interaction: boundaries are fluid and porous, networks of different size and shape overlap in space, and change is constant. The best outcome for such a framework is that the individual models – each of the spheres of interaction a testable hypothesis – present a scenario that plausibly fits the distribution of artifacts and other material evidence, and that together credibly portray the complexity of a multiscalar system. As I pointed out, this particular framework is designed for the geographical and cultural milieu of the LBA Aegean; it would not likely be valid for other times and places without extensive modification. Yet it is a tool; I offer it here with the hope that it will be tested and refined as needed. Much of the benefit of the framework resides in the way it can facilitate systematic thought about a particular problem. It may be useful in thinking through research designs, and in interpreting results.

There is nothing shockingly new in the methods I propose, since there are long traditions in both archaeology and geoarchaeology of recovering the kinds of data that could lead to the reconstitution of coastscapes and small worlds. The collaboration of archaeologists and geoarchaeologists at Kalamianos is hardly unique, but it does illustrate how interdisciplinary research can restore the essential elements of a Bronze Age coastal world. In other settings, it may not be as easy to recover ancient shores or the settlements and activity areas associated with them. A striking outcome of a long-term program of paleogeographic reconstruction of western Peloponnesian coastlines is that Bronze Age sites along much of the coast, which existed in a lagoon and barrier environment, are now buried under colluvium, alluvium, and lagoonal mud (Kraft et al. 2005: 33–35). In such cases, geophysical remote sensing may assist in the recovery of lost sites.

Most of these techniques are expensive and require lengthy analyses – even the rapid results of modern geophysical methods normally must be verified by excavation – but as I have emphasized throughout, it is difficult to reconstitute maritime networks at any scale without baseline information on the Bronze Age configuration of the coastline in the area of interest.

Maritime Coastal Communities

The maritime activities of coastal inhabitants are elusive. We learn little about them from the Linear B tablets, apart from a few cases of shipbuilding and rowing in state-controlled ships. The archaeological record contains limited faunal and artifactual evidence for the use of marine resources (Powell 1996), and the results of stable isotope analyses have not yet demonstrated a significant contribution of marine protein to the diet of individuals at coastal sites (Petroutsas and Manolis 2010; Triantaphyllou et al. 2008). This appears to fly in the face of reason – depictions of fish and fishing on pottery and the frescoes of fishermen at Akrotiri tend to inspire greater confidence. Perhaps further development of the methods and standards used for the stable isotope studies (Hedges 2004), and more careful excavation recovery methods, will resolve this contradiction.

I chose to focus on three related aspects of maritime activity: navigational skill, the transmission of maritime knowledge across generations, and the organization of maritime activity within the larger social setting of the coastal community. I proposed that two types of individuals were active on the sea: non-specialized fishermen and farmers operating in inshore waters and traveling to nearby destinations; and master navigators who were capable of directing long sea voyages beyond the confines of the small world. Hesiod, with his short crossings to Euboea, is representative of the first group, while Homer's hard sea captains belong to the second. This division too is fluid, but it agrees with ethnographic information from the South Pacific, where most sea travel is local and only a small percentage of men attain the status of master navigator capable of leading long voyages.

Ethnographic data are informative on the other two aspects. Among South Pacific islanders, navigational knowledge is sophisticated and is protected within the maritime community – a subset of the larger village community – by physical segregation in boathouses and at sea, and by an esoteric and secret body of maritime knowledge and lore.

Part of this lore involves vivid stories about markers and hazards en route to specific destinations. I suggested that the stories of hideous monsters and conspicuous burial tumuli in the *Odyssey* might be echoes of the kinds of maritime lore shared about distant and unfamiliar places in the Bronze Age. Specialized expertise in the mechanics of navigation and the features of specific itineraries constituted a habitus of maritime knowledge that was vital to the success of the maritime community, and it is not surprising that we should find traces of it embedded in metaphorical tales. Although there are no equivalent structures in the Mycenaean world, the Minoan ship sheds may have served a secondary function as meeting places for the seafaring community.

Building Networks

The network analyses of Broodbank (2000), with updates and modifications suggested by Knappett and colleagues (2008, 2011) and Leidwanger (2011), are promising advances toward an understanding of how networks actually form, expand, and contract. The more recent versions address specific shortcomings by adding a range of cultural and environmental variables, the values of which can be altered individually or covaried to simulate different conditions (Knappett), and by adding texture to the sea to produce more realistic travel times (Leidwanger). The social network studies of Duncan Watts and Steven Strogatz (Watts 1999; Watts and Strogatz 1998) and Albert-László Barabási (Barabási 2002; Barabási and Albert 1999) examine the behavior of networks, showing how shortcuts extend networks over long distances, and explaining why some sites are perennially better connected than most others, and expand in connectivity more rapidly than others. I suggested that these properties of social networks may help to explain the prominence of Knossos, Mycenae, and Kolonna at various moments in prehistory. Human behavior can be difficult to model, however, and social network models as they currently exist for the Aegean can be described as a work in progress.

A Universe of Coastscapes and Small Worlds

Malkin and colleagues (2007: 7) record a pithy quote from Barabási: “Networks are present everywhere. All we need is an eye for them” (Barabási 2002: 7). The same can be said for coastscapes and small worlds; if there is a central message to this book, it might be expressed in the exhortation: “They are out there; go out and find them!”

Bearing in mind that assigning a coastscape or small world is an act of interpretation and not observation (one does not really “find” them), the number of Mycenaean maritime small worlds one could investigate is practically unlimited. It primarily requires a shift in thinking about the archaeological record in terms of maritime cultural landscapes. Several archaeologists have already put a comparable approach to work, as, for example, Momigliano (2005) for the vicinity of Iasos in the southeastern Aegean and Crielaard (2006) and Kramer-Hajos (2008) for the Euboean Gulf. Other possibilities come immediately to mind. The Argolic Gulf would be a challenging case study, because of the complex and ambiguous nature of the relationships of the major sites around the Gulf and further inland (Mycenae, Midea, Tiryns, Argos, Asine, Lerna, Nafplion, etc.; see Sjöberg 2004; Voutsaki 2001, 2010). Although important paleocoastal work has been accomplished (Zangger 1991, 1993, 1994a, 1994b), the lack of systematic surface survey on much of the territory bordering the Gulf hinders discussion of the human landscape. Another large study might target the western Messenian coast of the Peloponnese, drawing upon the rich combination of archaeological survey and excavation, geoarchaeological studies, and the Pylian Linear B archives (Bennet 1999; Bennet and Shelmerdine 2001; Davis 1998; Zangger et al. 1997). On Crete, the Gulf of Mirabello and the Isthmus of Ierapetra, with the sites of Mochlos, Pseira, Kavousi, Gournia, and Vrokastro, would make an intriguing study. As much as anything, limitations of space prevent me from pursuing these case studies in the present work.

This book presents a set of methodological and conceptual approaches to support a particular vision of coastal archaeology, and strives to demonstrate what that approach would look like when applied to archaeological case studies. Despite the broad awareness of a comprehensive agenda for island archaeologies (Broodbank 2000; Rainbird 2007) and maritime cultural landscapes (Westerdahl 1992), the translation of these ideas into practice has been slow, as Berg (2010) stresses. I have tried to be equally explicit in defining an archaeological problem – a lack of balance in our knowledge of the Mycenaean maritime world – and offering a complete set of tools to attack it. I hope to stimulate discussion, but even more to encourage new field studies and analyses inspired by the maritime cultural landscape concept.

Notes

Chapter 2: Mycenaeans and the Sea

1 There are other useful frameworks that address the same issue. For example, Bernard Knapp and John Cherry (1994: 123–55) simplified Renfrew's list with four overlapping mechanisms of Late Bronze Age trade that emphasize the locus of control: centralized control, localized control, freelance trade, and gift exchange.

Chapter 3: Ships and Boats of the Aegean Bronze Age

1 McGrail (2001: 133) notes, however, that Egyptian shipwrights already knew of locked mortise-and-tenon joinery in the mid-third millennium BC, as superstructural elements of the Khufu funerary boat used the technique. It is uncertain why they chose not to join the hull planks in this way.

2 According to McGrail (2001: 138), in the Mediterranean even sewn ships relied to some extent on treenails or mortise-and-tenon fastenings within the seams with lacings across the seams. Thus, the status of an ancient Mediterranean tradition of solely sewn hulls comparable to that of northwestern Europe is uncertain.

3 The use of a pole for propulsion, known from Bronze Age Egypt but more suitable in riverine contexts, cannot be confirmed for the Aegean. Uniquely, the Stathatos seal (W910), of MM III–LM I date, may show two females poling a vessel that also has five oars below the hull.

4 There is enormous confusion about the relationship between the terms *steering oar* and *quarter rudder*, starting from their very definitions. There appears to be no universal agreement; depending on the source, they can be synonyms, hierarchically related (one is a kind of the other), or completely distinct (the rudder developed from and superseded the steering oar). For different perspectives, see Block 2003: 8–9; Mark 2005: 121–22; Mott 1991: 2; and Runyan 1999. Because most studies of Aegean Bronze Age ships use the term *steering oar*, with some justification, I follow that convention here.

5 A painted ceramic disk, recently discovered at As-Sabiyah in Kuwait in a context contemporaneous with Ubaid 3, the second half of the fifth millennium BC, depicts a boat with a bipod mast but no visible sail (Carter 2006). If we assume a sailing vessel, this would now be the earliest known use of mast and sail.

6 The gradual migration of the sail toward amidships in Egypt can be traced in representations from the Old to the New Kingdom: Jones 1995: 36–51, Plates V, VI, and VIII; Raban and Sterlitz 2002: 655.

7 The painted larnax from Gazi, Crete (W608) is a potential exception if the LM IIIB date is correct.

8 Note should also be taken of the so-called talismanic glyptic representations of ships, bearing stylized, abstract elements on and above hulls that could be sails, awning structures, *ikria* (see below), or other structures. These enigmatic images, with a chronological range between MM III and LM II, have long been associated with ritual and magic (Wedde 2000: 134–41).

9 These “types” are of course the creation of modern observers. Apart from possibly failing to approximate the way Mycenaean people formed distinctions about watercraft, they very likely suppress real variability (see below).

10 I am grateful to Hariclia Brecoulaki and Sharon Stocker for allowing me to mention the naval fresco, and for sending me an image of it in advance of publication.

11 I am grateful to Michael Cosmopoulos for his kind correspondence concerning the Iklaina fresco fragment, and for sending me a copy of the paper cited here.

12 The assumption that the highly abstracted form of the stempost device of the Iron Age continues to represent a bird, in a unbroken chain of continuity from Mycenaean times (Wachsmann 1998: 177–97), is challenged by Wedde (2002: 837–43), who interprets abstract curving devices of the Iron Age as horns.

13 de Souza (2000: 16) advances a more extreme view that does not recognize coastal plundering as piracy: “People using ships to plunder coastal settlements are not called pirates, so they cannot really be said to be practising piracy.” His subsequent discussion of Homeric and other sources appears to contradict this position.

14 This question forms part of a greater inquiry into strategies of self-representation among ruling groups. The Minoan and Mycenaean civilizations did not share the Egyptian and Near Eastern propensity for iconographic and narrative emphasis on individual rulers, for example. Several archaeologists have modeled these contrasting tendencies in terms of “network” (centralized, exclusionary) vs. “corporate” (decentralized, inclusive) strategies of leadership and self-representation (Blanton et al. 1996; Feinman 2000). The Mycenaeans, with their sharply hierarchical social structure revealed in the Linear B archives, are usually placed farther toward the “network” end of this spectrum than the Minoans: Borgna 2004; Parkinson and Galaty 2007.

15 This orientation may be partially a consequence of the inward-focused Middle Bronze Age societies from which they emerged.

16 Mention should also be made of the remains of a small wooden boat of the EBA–MBA transition recently discovered at Mitrou in central Greece (Van de Moortel and Zahou 2009). Conservation of this find is ongoing and little information is available at present.

17 This discussion does not take into account fishing in rivers or lakes. Because few rivers in Greece are perennial, especially in the southern and central regions and the Aegean islands, they are not a significant source of fish. Lakes of substantial size are also relatively few in Greece, but these presumably would have been well stocked with fish. The eels from Lake Kopais were an especial delicacy in classical times (Aristophanes, *Acharnians* l. 940–950; Pausanias 9.24.2; see Vika et al. 2009). Kopais was partially drained in the Mycenaean palatial period to reclaim land for agriculture (Knauss 2001).

18 Wedde's assessment is, of course, built upon the assumption that the artists tried to approximate the dimensions of real vessels of which they had some knowledge.

19 The sailing estimate from Crete to Egypt is based in part on a reference in the *Odyssey* (14.255–57) in which a sailing ship from Crete riding a fresh north wind made the Nile delta on the fifth day. The underlying assumption is that the performance traits of Aegean Bronze Age sailing ships were similar to those described by Homer. In view of the gradual development of ships like the Mycenaean galley in the Early Iron Age, this assumption has some validity.

20 Tilley (1999: 423) defines a *true* sailing ship as “...one that can make *some* headway under sail up wind” (*italics in original*), and continues, “I would like to distinguish it as sharply as possible from a galley.” Modern sailing boats are not considered capable of sailing directly into the wind, and so must undertake tacking maneuvers at various angles to windward.

21 Tzalas (1995b: 453–54) also suggests technical improvements that

would increase speed and minimize the rather excessive drift that the canoe experienced. These steps might reduce travel time somewhat.

Chapter 4: The Maritime Environment of the Aegean Sea

1 A thorough and highly readable account by Jamie Morton, *The Role of the Physical Environment in Ancient Greek Seafaring* (Morton 2001), covers most of this ground in far more detail than is possible here. His work, however, focuses on the historical period and to a large extent provides a commentary on a wide range of textual references to Aegean seafaring found in literature from Homer to the Roman period. Some of the conditions of seafaring that he describes – for example with respect to ships, navigational knowledge, and the organization of maritime trade – were quite distinct from those that prevailed earlier in the Mycenaean period. Nevertheless, this is important source material and most of his observations on the seafaring environment remain valid for the Bronze Age.

2 During a recent junior world championship sailing event in the Thermaic Gulf at Thessaloniki in July 2009, the competition was forced off the water by a strong vardari wind: <http://470.org/content.asp?id=1700>, accessed March 24, 2010.

3 The recent discovery of Lower Paleolithic habitation in the Plakias region of Crete, an island for at least the last five million years, implies open-sea navigation at least 130,000 years ago: Strasser et al. 2010. If confirmed, these results will have a pro-found impact on our knowledge of early seafaring and the dispersal of early humans.

4 Several periploi are extant in fragmentary or near-complete form. Among the more complete are The Periplus of Hanno the Navigator (sixth century BC), The Massaliote Periplus (sixth century BC?), The Periplus of Pseudo-Scylax (fourth or third century BC), The Periplus of Scymnus of Chios (late second century BC), The Periplus of the Erythraean Sea (first century BC), and the Periplus Ponti Euxini (early second century AD). The following passage from the Periplus Ponti

Euxini, written by Arrian (best known for his history of Alexander the Great), exemplifies the use of these features as segments in a longer journey:

From the Phasis, we passed the navigable river Charies; there are 90 stades between the two. From the river Charies, we sailed on another 90 stades to the river Chobos, and there we anchored....From the Chobos, we passed the navigable river Sigame; it is approximately 210 stades from the Chobos. After the Sigame is the river Tarsouras; there are 120 stades between the

two. The river Hippos is 150 stades beyond the Tarsouras, and the Astelephos 30 beyond the Hippos. (10.i-iii; transl. A. Liddle)

5 In this regard, it is interesting that one of the contingents of rowers listed on An 610 came from the island of Zakynthos and may have held mercenary status.

6 Hesiod himself had sailed only as far as Euboea, a short crossing from the mainland, and as a passenger at that. The advice he dispenses about the sea is common wisdom; he can hardly be said to have any specific knowledge about seafaring. The implication that land-locked farmers regularly owned ships and took to the sea is intriguing, but we cannot tell from this passage how far they ventured. According to the model presented in this book, these must have been relatively short-distance voyages, for reasons of knowledge but also because perishable commodities would not keep for long.

7 Tim Severin (1985: 132–44) gives a vivid description of the extraordinary difficulties of passing through the Bosphorus from the Dardanelles in the *Argo*, a reconstructed “Bronze Age” twenty-oared galley.

Characteristics, Discovery, and Reconstruction

1 The main area of disagreement I have with Morton (2001) and Papageorgiou (2009) concerns the pervasiveness of coastal change, especially of tectonic origin, and the importance of identifying coastal configuration at a specific, local scale. They are right that in general the processes of change are the same as in the past (by simple uniformitarian principles) and that the same range of coastal features existed in the Bronze Age as do now. But I believe that coastal change is more dynamic than they allow, resulting in shifting anchorages over time, and I hope to argue persuasively in this chapter for acquiring detailed knowledge of local coastal settings as a necessary first step toward understanding Mycenaean maritime networks at all scales.

2 *Isostasy* refers to the rebound of land masses formerly under ice sheets, causing a drop in relative sea level (isostatic compensation) in glacial margins. Because this is not a process that affects the Mediterranean, I do not consider it further.

3 Tanner (1995) outlines an alternate mechanism in which the ridge and swale sets are formed by a sea-level rise-and-fall couplet with amplitude from 5 to 30 centimeters.

4 Although similar in plan, the Minoan structures differ from later Classical ship sheds in their location away from the shore; thus, they were not used for launching ships as were the Classical ship sheds (Shaw and Shaw 1999: 369).

5 It may be significant that Ellen Davis (2007) considers the Ayia Irini frescoes to have been painted by traveling Cretan artists.

6 Van de Noort and O'Sullivan (2006: 36–37) emphasize that certain types of biogenic wetlands, notably peatlands, actually rank among the poorest biomass producers in the world because of saturation, which deprives plants and animals of nutrients, and high acidity. Mediterranean wetlands generally have a riverine or estuarine origin,

with high biomass and biodiversity.

7 Here I use this term in a generic sense to indicate the recovery of a continuous core; see Rapp and Hill 1998: 192–94 for distinctions among the terms *coring*, *drilling*, and *augering*.

8 Other biogenic clasts, including diatoms and pollen, are not included here as they have not played a significant role in paleocoastal reconstruction to date. For details, see Marriner and Morhange 2007: 170–71.

Chapter 6: Concepts for Mycenaean Coastal Worlds

1 Brad Duncan (2006: 10) points out that although Westerdahl coined a term that has come into common use, a long tradition of ethnographic, archaeological, and anthropological research in the Pacific had already addressed many of the same issues using oral traditions, toponymy, and specialized local knowledge to illuminate identity and belonging to place among maritime communities.

2 W. V. Harris (2005: 6, n. 15) observes that while the microregion is a central concept in *The Corrupting Sea*, it is nowhere defined explicitly enough to prevent ambiguity in attempting to apply it.

3 Constantakopoulou (2007: 231) acknowledges that the term *peraia* has a broader application to any region that is controlled or possessed by a state. The narrower sense employed here is, however, the most commonly attested.

4 Here we must treat Crete as a mainland or mini-continent, and not an island. It has not been suggested that the small islands off the

Cretan coast possessed peraiiai; rather, islands such as Mochlos and Psira acted as “gateways” to harbors on Crete's northern coast (Betancourt 2004; Betancourt and Banou 1991; Branigan 1991).

5 Malkin's important book, which incorporates his prior work on colonization, cross-cultural interaction, identity, and ethnicity into a network theory framework, arrived too late for me to consider in detail in the present work.

6 Leone Porciani (2009) observes that Horden and Purcell tend to emphasize peaceful relations, while underplaying the role of aggressive and hostile interactions.

7 This summary of Broodbank's PPA model is partly excerpted from Tartaron 2001b: 228.

8 For an overview of the intellectual history of network analysis, see Scott 1991: 7–38.

Chapter 7: Coastscapes and Small Worlds of the Aegean Bronze Age: Case Studies

1 Because changes in the coastline at a local scale since the Bronze Age can be considerable, this statement should be qualified simply by keeping in mind that today's good anchorages need not be the same as those in the Bronze Age, but on average anchorages of comparable kind and quality were available.

2 If the story that the hoard was found in the nineteenth century in a LH IIIB chamber tomb on Windmill Hill is correct, this would mean that the hoard was originally looted in the Bronze Age and redeposited in the chamber tomb, or that it was preserved as an

heirloom collection for several hundred years before its ultimate deposition in the LH IIIB burial.

3 The contributors to Fitton 2009 do not come to a consensus about the date of the Aigina Treasure, though a date between later MH I and MH II seems to be favored. The treasure and the shaft grave are not so readily comparable because the artifact composition between a jewelry hoard and a warrior burial are functionally distinct. Hiller (2009) believes that the gold objects from the two contexts represent different traditions, one Minoan (the jewelry of the Aigina Treasure) and one from the mainland (the shaft grave).

4 Much of the following discussion closely follows excerpts from Tartaron 2010: 171–72 and Tartaron et al. 2011, with some modifications and additions. These recent writings continue to reflect my current thinking on the matter.

5 The Saronic Harbors Archaeological Research Project is carried out under the auspices of the American School of Classical Studies at Athens, with the approval of the 37th Ephoreia of Prehistoric and Classical Antiquities and the 25th Ephoreia of Byzantine Antiquities, and a permit issued by the Greek Ministry of Culture. For their kind support, we wish to thank Konstantinos Kissas and Panayiota Kasimi from the 37th Ephoreia and Demetrios Athanasoulis from the 25th Ephoreia. We gratefully acknowledge financial support from the Institute for Aegean Prehistory, the U.S. National Science Foundation (Grant BCS-0810096), the Stavros S. Niarchos Foundation, the Loeb Classical Library Foundation, the Arete Foundation, the Florida State University, the University of Pennsylvania, and Norwich University.

6 Investigations of the underwater areas of Kalamianos and the Korphos Bay region are undertaken as a joint Greek-Canadian project, under the direction of Despina Koutsoumba of the Ephoreia of Enalion Antiquities and Joseph Boyce of McMaster University, representing the Canadian Institute in Greece. This project is independent of, but in close cooperation with, SHARP.

7 The reconstructed shoreline positions are approximations based on the *modern* bathymetric contours and do not take into account the effects of sediment accumulation and compaction following the submergence of the beachrock platforms. These parameters will be clarified in future studies.

8 Amy Dill and D. J. Pullen, personal communication. A number of samples have been selected for a future program of petrographic and chemical analysis aimed at clarifying the source of the potting materials as well as aspects of production and consumption.

9 Recent discussions with colleagues have raised the likelihood that similar cairns may exist in many places in southern Greece that have not previously been recognized as EBA features.

10 The interviews were much more extensive than those I consulted here. The oral histories will be the subject of future publication by Tzortzopoulou-Gregory.

11 For a brief but vivid description of a traditional charcoal-burning operation in the Souli region of southern Epirus, see Newby 1998: 168–170.

12 In the post-Bronze Age era, the progradation was asymmetrical, with the bifurcation of the Maeander into northern and southern branches, of which the northern branch caused a far more rapid advance of the coastline in the northern and central Gulf than in the south (Knipping et al. 2008: fig. 1; Müllenhoff et al. 2005).

13 Another tholos tomb was discovered at Kazanaki, but it is sufficiently distant from the settlements under discussion that it may have been attached to an undiscovered settlement.

References

- Acheson, P., 1999. "The Role of Force in the Development of Early Mycenaean Polities," in R. Laffineur, ed., *Polemos: Le Contexte Guerrier en Égée à l'Âge du Bronze*, *Aegaeum* 19. Liège: Université de Liège, pp. 97–104.
- Adams, J., 2001. "Ships and Boats as Archaeological Source Material," *World Archaeology* 32: 292–310.
- Adrimi-Sismani, V., 1994. "O Mykinaïkos Oikismos Diminiou," in *La Thessalie: Quinze Années de Recherches Archéologiques, 1975–1990, Bilans et Perspectives*. Athens: Kapon Editions, pp. 225–32.
- Adrimi-Sismani, V., 1999. "Mykinaïkos Keramikos Klivanos sto Dimini," in F. Dakoronia, ed., *I Periphereia tou Mykinaïkou Kosmou*. Lamia: Ypourgeio Politismou, pp. 131–42.
- Adrimi-Sismani, V., 2006. "The Palace of Iolkos and Its End," in S. Deger-Jalkotzy and I. S. Lemos, eds., *Ancient Greece: From the Mycenaean Palaces to the Age of Homer*. Edinburgh: Edinburgh University Press, pp. 465–81.
- Adrimi-Sismani, V., 2007. "Mycenaean Northern Borders Revisited: New Evidence from Thessaly," in M. L. Galaty and W. A. Parkinson, eds., *Rethinking Mycenaean Palaces II: Revised and Expanded Edition*. Los Angeles: Cotsen Institute of Archaeology, pp. 159–77.
- Adrimi-Sismani, V., 2010. "To Dimini sti Mesi Epochi Chalkou," in A. Philippa-Touchais, G. Touchais, S. Voutsaki, and J. Wright, eds., *Mesohelladika: Le Grèce Continentale au Bronze Moyen. Bulletin de Correspondance Hellénique Supplément* 52, pp. 301–13.
- Agouridis, C., 1997. "Sea Routes and Navigation in the Third Millennium Aegean," *Oxford Journal of Archaeology* 16: 1–24.
- Anastasiou-Alexopoulou, K., 2003. "I Thesi tis Salaminas sto Mykinaïko Kosmo," in E. Konsolaki-Yiannopoulou, ed., *Argosaronikos. Praktika Iou Diethnous Synedriou Istorias kai Archaïologias tou Argosaronikou, Poros, 26–29 Iouniou 1998*. Athens: Demos Porou, pp. 103–104.
- Andreou, S., M. Fotiadis, and K. Kotsakis, 2001. "Review of Aegean Prehistory V: The Neolithic and Bronze Age of Northern Greece," in

- T. Cullen, ed., *Aegean Prehistory: A Review*. Boston: Archaeological Institute of America, pp. 259–327.
- Andreou, S., and K. Kotsakis, 1999. “‘Mykinaiki Parousia’? ‘Mykinaiki Periphereia’? I Toumba Thessalonikis, mia Thesi tis Epochis Chalkou sti Makedonia,” in F. Dakoronia, ed., *I Periphereia tou Mykinaikou Kosmou. A’ Diethnes Diepistimoniko Symposio, Lamia 1994*. Lamia: Ypourgeio Politismou, 107–16.
- Ansheutz, K. F., R. H. Wilshusen, and C. L. Scheick, 2001. “An Archaeology of Landscapes: Perspectives and Directions,” *Journal of Archaeological Research* 9: 101–55.
- Antonaccio, C., 1998. “The Archaeology of Ancestors,” in C. Dougherty and L. Kurke, eds., *Cultural Poetics in Archaic Greece: Cult, Performance, Politics*. New York: Oxford University Press, pp. 46–70.
- Aravantinos V. L., L. Godart, and A. Sacconi, 2001. *Thèbes: Fouilles de la Cadmée I. Les Tablettes en Linéaire B de la Odos Pelopidou. Édition et Commentaire*. Pisa: Instituti Editoriali e Poligrafici Internazionali.
- Ashmore, W., and A. B. Knapp, eds., 1999. *Archaeologies of Landscape: Contemporary Perspectives*. Malden, MA: Blackwell.
- Astour, M., 1965. “New Evidence on the Last Days of Ugarit,” *American Journal of Archaeology* 69: 253–58.
- Atkinson, T. D., R. C. Bosanquet, C. C. Edgar, A. J. Evans, D. G. Hogarth, D. Mackenzie, C. Smith, and F. B. Welch, 1904. *Excavations at Phylakopi in Melos. Journal of Hellenic Studies Supplement 4*. London: Society for the Promotion of Hellenic Studies.
- Bachhuber, C., 2003. *Aspects of Late Helladic Sea Trade*. Unpublished M.A. thesis, Texas A & M University.
- Bachhuber, C., 2006. “Aegean Interest on the Uluburun Ship,” *American Journal of Archaeology* 110: 345–63.
- Banning, E. B., 2002. *Archaeological Survey. Manuals in Archaeological Method, Theory, and Technique* 1. New York: Plenum Publishers.
- Barabási, A.-L., 2002. *Linked: The New Science of Networks*. Cambridge, MA: Perseus.
- Barabási, A.-L., and R. Albert, 1999. “Emergence of Scaling in Random Networks,” *Science* 286: 509–12.
- Basch, L., 1987. *Le Musée Imaginaire de la Marine Antique*. Athens: Hellenic Institute for the Preservation of Nautical Tradition.
- Basharin, D. V., 2004. “On the Problem of Influence of the North

- Atlantic and Southern Oscillations on the Variability of Surface Air Temperature in the European–Mediterranean Region in Summer and Autumn,” *Physical Oceanography* 14: 313–19.
- Bass, G. F., 1961. “The Cape Gelidonya Wreck: Preliminary Report,” *American Journal of Archaeology* 65: 267–76.
- Bass, G. F., 1967. *Cape Gelidonya: A Bronze Age Shipwreck. Transactions of the American Philosophical Society* 57.8. Philadelphia: American Philosophical Society.
- Bass, G. F., 1976. “Sheytan Deresi: Preliminary Report,” *International Journal of Nautical Archaeology* 5: 293–303.
- Bass, G. F., 1988. “Return to Cape Gelidonya,” *INA Newsletter* 15(2): 2–5.
- Bass, G. F., 1989. “The Construction of a Seagoing Vessel of the Late Bronze Age,” in H. Tzalas, ed., *Tropis I. First International Symposium on Ship Construction in Antiquity, Piraeus, 30 August–1 September 1985*. Athens: Hellenic Institute for the Preservation of Nautical Tradition, pp. 25–35.
- Bass, G. F., 1990. “Cape Gelidonya – Once More,” *INA Newsletter* 16(4): 12–13.
- Bass, G. F. 1991. “Evidence of Trade from Bronze Age Shipwrecks,” in N. H. Gale, ed., *Bronze Age Trade in the Mediterranean, SIMA 90*. Göteborg: Paul Åströms Förlag, pp. 69–82.
- Bass, G. F., 1997. “Prolegomena to a Study of Maritime Traffic in Raw Materials to the Aegean during the Fourteenth and Thirteenth Centuries B.C.,” in R. Laffineur and P. P. Betancourt, eds., *Techne: Craftsmen, Craftswomen and Craftsmanship in the Aegean Bronze Age, Aegaeum* 16. Liège: Université de Liège, pp. 153–70.
- Bass, G. F., 1998. “Sailing between the Aegean and the Orient in the Second Millennium BC,” in E. H. Cline and D. Harris-Cline, eds., *The Aegean and the Orient in the Second Millennium: Proceedings of the 50th Anniversary Symposium, Cincinnati, 18–20 April 1997, Aegaeum* 18. Liège: Université de Liège, pp. 183–91.
- Bass, G. F., ed., 2005a. *Beneath the Seven Seas: Adventures with the Institute of Nautical Archaeology*. London: Thames & Hudson.
- Bass, G. F., 2005b. “Cargo from the Age of Bronze: Cape Gelidonya, Turkey,” in G. F. Bass, ed., *Beneath the Seven Seas: Adventures with the Institute of Nautical Archaeology*. London: Thames & Hudson, pp. 48–

- Bass, G. F., 2005c. "Introduction: Reclaiming Lost History from Beneath the Seven Seas," in G. F. Bass, ed., *Beneath the Seven Seas: Adventures with the Institute of Nautical Archaeology*. London: Thames & Hudson, pp. 10–27.
- Bass, G. F., 2005d. "An Enigma at Devil Creek: eytan Deresi, Turkey," in G. F. Bass, ed., *Beneath the Seven Seas: Adventures with the Institute of Nautical Archaeology*. London: Thames & Hudson, pp. 31–33.
- Batzliou-Efstathiou, A., 2003. "I Ysteroelladiki IIIC sto Kastro tou Volou," in N. Kyparissi-Apostolika and M. Papaconstantinou, eds., *The Periphery of the Mycenaean World, 2nd International Interdisciplinary Colloquium*. Lamia: Ypourgeio Politismou, pp. 253–62.
- Bauer, B. O., and R. G. D. Davidson-Arnott, 2002. "A General Framework for Modeling Sediment Supply to Coastal Dunes Including Wind Angle, Beach Geometry, and Fetch Effects," *Geomorphology* 49: 89–108.
- Bay, B., and B. Schröder, n.d. "Human-Induced Soil Erosion and Delta Progradation in the Grand Menderes Valley (SW Turkey)" (poster). <http://www.ruhr-uni-bochum.de/milet/in/geo-meandr/meander.pdf> (accessed 11 July 2011).
- Bell, C., 2005. "Wheels within Wheels? A View of Mycenaean Trade from the Levantine Emporia," in R. Laffineur and E. Greco, eds., *Emporia: Aegeans in the Central and Eastern Mediterranean, Aegaeum* 25. Liège: Université de Liège, pp. 363–70.
- Bender, B., ed., 1993. *Landscape, Politics and Perspectives*. Providence: Berg.
- Bengtsson, L., K. Arpe, E. Roeckner, and U. Schulzweida, 1996. "Climate Predictability Experiments with a General Circulation Model," *Climate Dynamics* 12: 261–78.
- Bennet, J., 1997. "Homer and the Bronze Age," in I. Morris and B. Powell, eds., *A New Companion to Homer*. Leiden: Brill, pp. 511–33.
- Bennet, J., 1999. "Pylos: The Expansion of a Mycenaean Palace Center," in M. L. Galaty and W. A. Parkinson, eds., *Rethinking Mycenaean Palaces: New Interpretations of an Old Idea*. Los Angeles: Cotsen Institute of Archaeology, pp. 9–18.
- Bennet, J., 2001. "Agency and Bureaucracy: Thoughts on the Nature and Extent of Administration in Bronze Age Pylos," in S. Voutsaki

- and J. Killen, eds., *Economy and Politics in the Mycenaean Palace States: Proceedings of a Conference Held on 1–3 July 1999 in the Faculty of Classics*. Cambridge: Cambridge Philological Society, pp. 25–37.
- Bennet, J., 2008. “The Aegean Bronze Age,” in *Early Mediterranean Economies of the Near East. Cambridge Histories Online*. Cambridge: Cambridge University Press, pp. 175–210.
- Bennet, J., and J. L. Davis, 1999. “Making Mycenaeans: Warfare, Territorial Expansion, and Representations of the Other in the Pylian Kingdom,” in R. Laffineur, ed., *Polemos: Le Contexte Guerrier en Égée à l’Âge du Bronze*, *Aegaeum* 19. Liège: Université de Liège, pp. 105–20.
- Bennet, J., and C. Shelmerdine, 2001. “Not the Palace of Nestor: The Development of the ‘Lower Town’ and other Non-palatial Settlements in LBA Messenia,” in K. Branigan, ed., *Urbanism in the Aegean Bronze Age*. Sheffield: Sheffield Academic Press, pp. 135–40.
- Ben-Shlomo, D., E. Nodarou, and J. B. Rutter, 2011. “Transport Stirrup Jars from the Southern Levant: New Light on Commodity Exchange in the Eastern Mediterranean,” *American Journal of Archaeology* 115: 329–53.
- Bérard, V., 1927–9. *Les Navigations d’Ulysse*, 4 vols. Paris: Armand Colin.
- Berg, I., 2010. “Recapturing the Sea: The Past and Future of ‘Island Archaeology’ in Greece,” *Shima* 4: 16–26.
- Besonen, M. R., G. Rapp, and Z. Jing, 2003. “The Lower Acheron River Valley: Ancient Accounts and the Changing Landscape,” in J. Wiseman and K. Zachos, eds., *Landscape Archaeology in Southern Epirus, Greece I. Hesperia Supplement* 32. Princeton: American School of Classical Studies at Athens, pp. 199–263.
- Betancourt, P. P., 2004. “Pseira and Knossos: The Transformation of an East Cretan Seaport,” in L. P. Day, M. S. Mook, and J. D. Muhly, eds., *Crete Beyond the Palaces. Proceedings of the Crete 2000 Conference*. Philadelphia: INSTAP Academic Press, pp. 21–28.
- Betancourt, P. P., and E. S. Banou, 1991. “Pseira and Minoan Sea Trade,” in R. Laffineur and L. Basch, eds., *Thalassa: L’Égée Préhistorique et la Mer*, *Aegaeum* 7. Liège: Université de Liège, pp. 107–10.
- Biber, K., 2005. “Cannibals and Colonialism,” *Sydney Law Review* 27: 623–37.

- Bintliff, J., 1992. "Erosion in Mediterranean Lands: A Reconsideration of Pattern, Process, Methodology," in M. Bell and J. Boardman, eds., *Past and Present Soil Erosion: Archaeological and Geographical Perspectives*. Oxford: Oxbow Books, pp. 125–32.
- Bintliff, J., ed., 1999. *Structure and Contingency: Evolutionary Processes in Life and Human Society*. Leicester: Leicester University Press.
- Bintliff, J., 2010. "The Middle Bronze Age through the Surface Survey Record of the Greek Mainland: Demographic and Sociopolitical Insights," in A. Philippa-Touchais, G. Touchais, S. Voutsaki, and J. Wright, eds., *Mesohelladika: Le Grèce Continentale au Bronze Moyen. Bulletin de Correspondance Hellénique Supplément 52*, pp. 755–63.
- Blake, E., 2008. "The Mycenaeans in Italy: A Minimalist Position," *Papers of the British School at Rome* 76: 1–34.
- Blanton, R., G. M. Feinman, S. A. Kowalewski, and P. N. Peregrine, 1996. "A Dual-Processual Theory for the Evolution of Mesoamerican Civilization," *Current Anthropology* 37: 1–14.
- Block, L., 2003. *To Harness the Wind: A Short History of the Development of Sails*. Annapolis: Naval Institute Press.
- Blue, L. K., 1997. "Cyprus and Cilicia: The Typology and Palaeogeography of Second Millennium Harbors," in S. Swiny, R. L. Hohlfelder, and H. W. Swiny, eds., *Res Maritimae: Cyprus and the Eastern Mediterranean from Prehistory to Late Antiquity*. Atlanta: Scholars Press, pp. 31–43.
- Blue, L., F. Hocker, and A. Englert, eds., 2006. *Connected by the Sea: Proceedings of the Tenth International Symposium on Boat and Ship Archaeology, Roskilde 2003*. Oxford: Oxbow Books.
- Borgna, E., 2004. "Aegean Feasting: A Minoan Perspective," in J. C. Wright, ed., *The Mycenaean Feast*. Princeton: American School of Classical Studies at Athens, pp. 127–59.
- Bourdieu, P., 1977. *Outline of a Theory of Practice* (transl. R. Nice). Cambridge: Cambridge University Press.
- Bourdieu, P., 1990. *The Logic of Practice*. Palo Alto: Stanford University Press.
- Boyce, J. I., E. G. Reinhardt, and B. N. Goodman, 2009. "Magnetic Detection of Ship Ballast Deposits and Anchorage Sites in King Herod's Roman Harbour, Caesarea Maritima, Israel," *Journal of Archaeological Science* 36: 1516–1526.

- Boyce, J. I., E. G. Reinhardt, A. Raban, and M. R. Pozza, 2004. "Marine Magnetic Survey of a Submerged Roman Harbour, Caesarea Maritima, Israel," *International Journal of Nautical Archaeology* 33: 122–36.
- Bradford, A. S., 2007. *Flying the Black Flag: A Brief History of Piracy*. London: Praeger.
- Bradford, E., 2005 [1963]. *Ulysses Found*. Charleston, SC: The History Press.
- Branigan, K., 1991. "Mochlos – An Early Aegean 'Gateway Community'?", in R. Laffineur and L. Basch, eds., *Thalassa: L'Égée Préhistorique et la Mer, Aegaeum* 7. Liège: Université de Liège, pp. 97–105.
- Branigan, K., 1999. "The Nature of Warfare in the Southern Aegean during the Third Millennium B.C.," in R. Laffineur, ed., *Polemos: Le Contexte Guerrier en Égée à l'Âge du Bronze, Aegaeum* 19. Liège: Université de Liège, pp. 87–94.
- Braudel, F., 1972. *The Mediterranean and the Mediterranean World in the Age of Philip II*. New York: Harper & Row.
- Brecoulaki, H., S. Stocker, J. Davis, and E. Egan, 2011. "An Unprecedented Naval Scene from Hall 64 of the 'Palace of Nestor' at Pylos," paper presented at the conference "Mycenaean Wall Paintings in Context: New Discoveries and Old Finds Reconsidered," 11–13 February 2011, American School of Classical Studies at Athens.
- Breen, C., and P. J. Lane, 2003. "Archaeological Approaches to East Africa's Changing Seascapes," *World Archaeology* 35: 469–89.
- Brody, L. R., and M. J. R. Nestor, 1980. *Handbook for Forecasters in the Mediterranean. Part 2: Regional Forecasting Aids for the Mediterranean Basin*. Monterey, CA: Naval Environmental Prediction Research Facility.
- Broodbank, C., 1993. "Ulysses without Sails: Trade, Distance, Knowledge and Power in the Early Cyclades," *World Archaeology* 24: 315–31.
- Broodbank, C., 2000. *An Island Archaeology of the Early Cyclades*. Cambridge: Cambridge University Press.
- Brückner, H., 2003. "Delta Evolution and Culture: Aspects of Geoarchaeological Research in Miletos and Priene," in G. A. Wagner, E. Pernicka, and H.-P. Uerpmann, eds., *Troia and the Troad: Scientific*

- Approaches*. Berlin: Springer Verlag, pp. 121–42.
- Bryce, T., 2005. *The Kingdom of the Hittites*, New Edition. Oxford: Oxford University Press.
- Bunimovitz, S., 1998. “Sea Peoples in Cyprus and Israel: A Comparative Study of Immigration Processes,” in S. Gitin, A. Mazar, and E. Stern, eds., *Mediterranean Peoples in Transition, Thirteenth to Early Tenth Centuries BCE. In Honor of Professor Trude Dothan*. Jerusalem: Israel Exploration Society, pp. 103–13.
- Burke, B., 2005. “Materialization of Mycenaean Ideology and the Ayia Triada Sarcophagus,” *American Journal of Archaeology* 109: 403–22.
- Burns, B. E., 2010. *Mycenaean Greece, Mediterranean Commerce, and the Formation of Identity*. Cambridge: Cambridge University Press.
- Butzer, K., 1996. “Ecology in the Long View: Settlement Histories, Agrosystemic Strategies, and Ecological Performance,” *Journal of Field Archaeology* 23: 141–50.
- Butzer, K., 2005. “Environmental History in the Mediterranean World: Cross-Disciplinary Investigation of Cause and Effect for Degradation and Soil Erosion,” *Journal of Archaeological Science* 32: 1773–800.
- Buxeda i Garrigós, J., R. E. Jones, V. Kilikoglou, S. T. Levi, Y. Maniatis, J. Mitchell, L. Vagnetti, K. A. Wardle, and S. Andreou, 2003. “Technology Transfer at the Periphery of the Mycenaean World: The Cases of Mycenaean Pottery Found in Central Macedonia (Greece) and the Plain of Sybaris (Italy),” *Archaeometry* 48: 263–84.
- Carpenter, R., 1966. *Discontinuity in Greek Civilization*. Cambridge: Cambridge University Press.
- Carter, R., 2006. “Boat Remains and Maritime Trade in the Persian Gulf during the Sixth and Fifth Millennium BC,” *Antiquity* 80: 52–63.
- Casson, L., 1995 [1971]. *Ships and Seamanship in the Ancient World*. Baltimore: Johns Hopkins University Press.
- Cavanagh, W., and C. Mee, 1998. *A Private Place: Death in Prehistoric Greece. SIMA 125*. Jonsered: Paul Åströms Förlag.
- Chadwick, J., 1994 [1976]. *The Mycenaean World*. Cambridge: Cambridge University Press.
- Chapin, A. P., 2007. “A Man's World? Gender and Male Coalitions in the West House Miniature Frescoes,” in P. P. Betancourt, M. C. Nelson, and H. Williams, eds., *Krinoi kai Limenes: Studies in Honor of*

- Joseph and Maria Shaw. Philadelphia: INSTAP Academic Press, pp. 139–44.
- Chapman, H. P., and P. R. Chapman, 2005. “Seascapes and Landscapes – The Siting of the Ferriby Boat Finds in the Context of Prehistoric Pilotage,” *International Journal of Nautical Archaeology* 34: 43–50.
- Cherry, J. F., 2004. “Mediterranean Island Prehistory: What's Different and What's New?” in S. M. Fitzpatrick, ed., *Voyages of Discovery: The Archaeology of Islands*. Westport, CT: Praeger, pp. 233–48.
- Cherry, J. F., 2009. “Sorting Out Crete's Prepalatial Off-Island Interactions,” in W. A. Parkinson and M. L. Galaty, eds., *Archaic State Interaction: The Eastern Mediterranean in the Bronze Age*. Santa Fe: School for Advanced Research Press, pp. 107–40.
- Cherry, J. F., and J. L. Davis, 1999. “An Archaeological Homily,” in M. L. Galaty and W. A. Parkinson, eds., *Rethinking Mycenaean Palaces: New Interpretations of an Old Idea*. Los Angeles: Cotsen Institute of Archaeology, pp. 91–98.
- Cherry, J. F., and J. L. Davis, 2001. “‘Under the Sceptre of Agamemnon’: The View from the Hinterlands of Mycenae,” in K. Branigan, ed., *Urbanism in the Aegean Bronze Age*. Sheffield: Sheffield Academic Press, pp. 141–59.
- Cherry, J. F., J. L. Davis, E. Mantzourani, and T. M. Whitelaw, 1991. “The Survey Methods,” in J. F. Cherry, J. L. Davis, and E. Mantzourani, *Landscape Archaeology as Long-Term History: Northern Keos in the Cycladic Islands from Earliest Settlement to Modern Times*. *Monumenta Archaeologica* 16. Los Angeles: UCLA Press, pp. 13–35.
- Childe, V. G., 1925. *The Dawn of European Civilization*. London: Paul, Trench, Trubner & Co.
- Chrysoulaki, S., 2005. “The Imaginary Navy of Minoan Crete: Rocky Coasts and Probable Harbours,” in R. Laffineur and E. Greco, eds., *Emporia: Aegeans in the Central and Eastern Mediterranean*, *Aegaeum* 25. Liège: Université de Liège, pp. 77–90.
- Clemmer, R. O., 1996. “Ideology and Identity: Western Shoshoni ‘Cannibal’ Myth as Ethnonational Narrative,” *Journal of Anthropological Research* 52: 207–23.
- Cline, E. H., 1991. “A Possible Hittite Embargo against the Mycenaeans,” *Historia* 40: 1–9.
- Cline, E. H., 1994. *Sailing the Wine-Dark Sea: International Trade and the Late Bronze Age Aegean*. *British Archaeological Reports International*

- Cline, E. H., 2007. "Rethinking Mycenaean International Trade with Egypt and the Near East," in M. Galaty and W. Parkinson, eds., *Rethinking Mycenaean Palaces II: Revised and Expanded Edition*. Los Angeles: Cotsen Institute of Archaeology, pp. 190–200.
- Cline, E. H., 2009. "Bronze Age Interactions between the Aegean and the Eastern Mediterranean Revisited: Mainstream, Periphery, or Margin?," in W. A. Parkinson and M. L. Galaty, eds., *Archaic State Interaction: The Eastern Mediterranean in the Bronze Age*. Santa Fe: School for Advanced Research Press, pp. 161–80.
- Cline, E. H., A. Yasur-Landau, and N. Goshen, 2011. "New Fragments of Aegean-Style Painted Plaster from Tel Kabri, Israel," *American Journal of Archaeology* 115: 245–61.
- Conlin, D., 1999. *The Wind-Made World: The Nautical Geography of the Mycenaean Peloponnese*. Unpublished Ph.D. dissertation, Brown University.
- Constantakopoulou, C., 2007. *The Dance of the Islands: Insularity, Networks, the Athenian Empire and the Aegean World*. Oxford: Oxford University Press.
- Cooney, G., 2003. "Introduction: Seeing Land from the Sea," *World Archaeology* 35: 323–28.
- Cosmopoulos, M., 2011. "A Group of New Mycenaean Frescoes from Iklaina, Pylos," paper presented at the conference "Mycenaean Wall Paintings in Context: New Discoveries and Old Finds Reconsidered," 11–13 February 2011, American School of Classical Studies at Athens.
- Crego, D. M., 2007. "Exchange in Period IV at Ayia Irini on Kea," in F. Felten, W. Gauß, and R. Smetana, eds., *Middle Helladic Pottery and Synchronisms. Ägina-Kolonna Forschungen und Ergebnisse I*. Vienna: Verlag der Österreichischen Akademie der Wissenschaften, pp. 333–37.
- Crego, D. M., 2010. "Ayia Irini IV: A Distribution Center for the Middle Helladic World?" in A. Philippa-Touchais, G. Touchais, S. Voutsaki, and J. Wright, eds., *Mesohelladika: Le Grèce Continentale au Bronze Moyen. Bulletin de Correspondance Hellénique Supplément* 52, pp. 841–845.
- Crielaard, J. P., 2000. "Homeric and Mycenaean Long Distance Contacts: Discrepancies in the Evidence," *Bulletin Antieke Beschaving*

- Crielaard, J. P., 2006. “*Basileis* at Sea: Elites and External Contacts in the Euboean Gulf Region from the End of the Bronze Age to the Beginning of the Iron Age,” in S. Deger-Jalkotzy and I. S. Lemos, eds., *Ancient Greece: From the Mycenaean Palaces to the Age of Homer. Edinburgh Leventis Studies* 3. Edinburgh: Edinburgh University Press, pp. 271–97.
- Cultraro, M., 2005. “Aegeans on Smoke-Shrouded Lemnos: A Reassessment of the Mycenaean Evidence for Poliochni and Other Sites,” in R. Laffineur and E. Greco, eds., *Emporia: Aegeans in the Central and Eastern Mediterranean, Aegaeum* 25. Liège: Université de Liège, pp. 237–46.
- Cunliffe, B., 2001. *Facing the Ocean: The Atlantic and Its Peoples*. Oxford: Oxford University Press.
- Curry, J. R., 1964. “Transgressions and Regressions,” in R. L. Miller, ed., *Papers in Marine Geology, Shepard Commemorative Volume*. New York: MacMillan, pp. 175–203.
- Dabney, M. K., P. Halstead, and P. Thomas, 2004. “Mycenaean Feasting on Tsoungiza at Ancient Nemea,” in J. C. Wright, ed., *The Mycenaean Feast*. Princeton: American School of Classical Studies at Athens, pp. 77–95.
- Dakoronia, F., 1990. “Warships on Sherds of LH IIIC Kraters from Kynos,” in H. Tzalas, ed., *Tropis II. Second International Symposium on Ship Construction in Antiquity, Delphi, 27–29 August 1987*. Athens: Hellenic Institute for the Preservation of Nautical Tradition, pp. 117–22.
- Dakoronia, F., 1999. “Representations of Sea-Battles on Mycenaean Ships from Kynos,” in H. Tzalas, ed., *Tropis V. Fifth International Symposium on Ship Construction in Antiquity, Nauplia, 26, 27, 28 August 1993*. Athens: Hellenic Institute for the Preservation of Nautical Tradition, pp. 119–28.
- Dakoronia, F., 2002. “Further Finds from Kynos,” in H. Tzalas, ed., *Tropis VII. Seventh International Symposium on Ship Construction in Antiquity, Pylos, 26, 27, 28, 29 August 1999*. Athens: Hellenic Institute for the Preservation of Nautical Tradition, pp. 283–90.
- Dakoronia, F., 2006. “Mycenaean Pictorial Style at Kynos, East Lokris,” in E. Rystedt and B. Wells, eds., *Pictorial Pursuits: Figurative Painting on Mycenaean and Geometric Pottery*. Stockholm: Svenska Institutet i

Athen, pp. 23–29.

Darcque, P., 2005. *L'Habitat Mycénien. Formes et Fonctions de l'Espace Bâti en Grèce Continentale à la Fin du IIe Millénaire avant J.-C.* Athens: École française d'Athènes.

Davis, D., 2002. "Maritime Space and Night-Time Sailing in the Ancient Eastern Mediterranean," in H. Tzalas, ed., *Tropis VII. Seventh International Symposium on Ship Construction in Antiquity*, Pylos, 26, 27, 28, 29 August 1999. Athens: Hellenic Institute for the Preservation of Nautical Tradition, pp. 291–309.

Davis, E., 2007. "Brush Work," in P. P. Betancourt, M. C. Nelson, and H. Williams, eds., *Krinoi kai Limenes: Studies in Honor of Joseph and Maria Shaw*. Philadelphia: INSTAP Academic Press, pp. 145–50.

Davis, J. L., 1979. "LH I Pottery from Korakou," *Hesperia* 48: 234–63.

Davis, J. L., ed., 1998. *Sandy Pylos: An Archaeological History from Nestor to Navarino*. Austin: University of Texas Press.

Davis, J. L., 2008. "Minoan Crete and the Aegean Islands," in C. W. Shelmerdine, ed., *The Cambridge Companion to the Aegean Bronze Age*. Cambridge: Cambridge University Press, pp. 186–208.

Deger-Jalkotzy, S., 2006. "Late Mycenaean Warrior Tombs," in S. Deger-Jalkotzy and I. S. Lemos, eds., *Ancient Greece: From the Mycenaean Palaces to the Age of Homer*. Edinburgh Leventis Studies 3. Edinburgh: Edinburgh University Press, pp. 151–79.

Deger-Jalkotzy, S., 2008. "Decline, Destruction, Aftermath," in C. W. Shelmerdine, ed., *The Cambridge Companion to the Aegean Bronze Age*. Cambridge: Cambridge University Press, pp. 387–415.

Deith, M. R., 1988. "A Molluscan Perspective on the Role of Foraging in Neolithic Farming Communities," in G. Bailey and J. Parkington, eds., *The Archaeology of Prehistoric Coastlines*. Cambridge: Cambridge University Press, pp. 116–24.

de Souza, P., 2000. *Piracy in the Greco-Roman World*. Cambridge: Cambridge University Press.

Dickinson, O. T. P. K., 1977. *The Origins of Mycenaean Civilisation*, SIMA 49. Göteborg: Paul Åströms Förlag.

Dickinson, O. T. P. K., 2006. *The Aegean from Bronze Age to Iron Age: Continuity and Change between the Twelfth and Eighth Centuries BC*. London: Routledge.

Dothan, T., 1998. "Initial Philistine Settlement: From Migration to

- Coexistence,” in S. Gitin, A. Mazar, and E. Stern, eds., *Mediterranean Peoples in Transition, Thirteenth to Early Tenth Centuries BCE. In Honor of Professor Trude Dothan*. Jerusalem: Israel Exploration Society, pp. 148–61.
- Doumas, C., 1990. “Weapons and Fortifications,” in L. Marangou, ed., *Cycladic Culture: Naxos in the 3rd Millennium BC*. Athens: Nicholas P. Goulandris Foundation, pp. 90–92.
- Doumas, C., 1992. *The Wall Paintings of Thera*. Athens: Idryma Theras–Petrikos M. Nomikos.
- Drewett, P., 1999. *Field Archaeology: An Introduction*. London: Routledge.
- Draws, R., 1993. *The End of the Bronze Age: Changes in Warfare and the Catastrophe ca. 1200 B.C.* Princeton: Princeton University Press.
- Driessen, J., and A. Farnoux, eds., 1997. *La Crète Mycénienne. Bulletin de Correspondance Hellénique Supplément 30*. Paris: École française d’Athènes.
- Duncan, B., 2006. *The Maritime Archaeology and Maritime Cultural Landscapes at Queenscliffe: A Nineteenth Century Australian Coastal Community*. Ph.D. dissertation, James Cook University.
- Durn, G., 2003. “Terra Rossa in the Mediterranean Region: Parent Materials, Composition and Origin,” *Geologia Croatica* 56: 83–100.
- Earle, T., 2011. “Redistribution and the Political Economy: The Evolution of an Idea,” *American Journal of Archaeology* 115: 237–44.
- El Banna, M. M., and O. E. Frihy, 2009. “Human-Induced Changes in the Geomorphology of the Northeastern Coast of the Nile Delta, Egypt,” *Geomorphology* 107: 72–78.
- Endfield, G., 1997. “Myth, Manipulation and Myopia in the Study of Mediterranean Soil Alluviation,” in A. Sinclair, E. Slater, and J. Gowlett, eds., *Archaeological Science 1995*. Oxford: Oxbow Books, pp. 241–48.
- Ersoy, Y., 1993. *Clazomenae: The Archaic Settlement*. Unpublished Ph.D. dissertation, Bryn Mawr College.
- Fagan, B., 2000. *The Little Ice Age: How Climate Made History, 1300–1850*. New York: Basic Books.
- Farid, S., 2000. “The Excavation Process at Çatalhöyük,” in I. Hodder, ed., *Towards Reflexive Method in Archaeology: The Example at*

- Çatalhöyük. British Institute of Archaeology at Ankara, Monograph 28. Cambridge: Cambridge University Press, pp. 19–35.
- Feinberg, R., 1988. *Polynesian Seafaring and Navigation: Ocean Travel in Anutan Culture and Society*. Kent, OH: Kent State University Press.
- Feinman, G. M., 2000. "Corporate/Network: New Perspectives on Models of Political Action and the Puebloan Southwest," in M. B. Schiffer, ed., *Social Theory in Archaeology*. Salt Lake City: University of Utah Press, pp. 31–51.
- Felten, F., 1986. "Early Urban History and Architecture of Ancient Aigina," in R. Hägg and D. Konsola, eds., *Early Helladic Architecture and Urbanization, Proceedings of a Seminar held at the Swedish Institute in Athens, June 8, 1985*. Göteborg: Paul Åströms Förlag, pp. 21–28.
- Felten, F., 2007. "Aegina-Kolonna: The History of a Greek Acropolis," in F. Felten, W. Gauß, and R. Smetana, eds., *Middle Helladic Pottery and Synchronisms. Ägina-Kolonna Forschungen und Ergebnisse I*. Vienna: Verlag der Österreichischen Akademie der Wissenschaften, pp. 11–34.
- Felten, F., 2009. "Aigina-Kolonna in the Early and Middle Bronze Age," in J. L. Fitton, ed., *The Aigina Treasure: Aegean Bronze Age Jewellery and a Mystery Revisited*. London: British Museum Press, pp. 32–35.
- Felten, F., C. Reinholdt, E. Pollhammer, W. Gauß, and R. Smetana, 2008. "Ägina-Kolonna 2007: Vorbericht über die Grabungen des Fachbereichs Altertumswissenschaften/Klassische und Frühägäische Archäologie der Universität Salzburg," *Jahreshefte des Österreichischen Archäologischen Institutes in Wien* 77: 47–76.
- Feuer, B., 1983. *The Northern Mycenaean Border in Thessaly. British Archaeological Reports International Series 176*. Oxford: B.A.R.
- Feuer, B., 1994. "Mycenaean Thessaly," in *La Thessalie: Quinze Années de Recherches Archéologiques 1975–1990, Bilans et Perspectives*. Athens: Kapon Editions, pp. 211–14.
- Feuer, B., 1999. "The Mycenaean Periphery: Some Theoretical and Methodological Considerations," in F. Dakoronia, ed., *I Periphēria tou Mykinaikou Kosmou. A' Diethnes Diepistimoniko Symposio, Lamia 1994*. Lamia: Ypourgeio Politismou, pp. 7–14.
- Feuer, B., 2003. "Cultural Interaction Processes in the Mycenaean Periphery," in N. Kyparissi-Apostolika and M. Papaconstantinou, eds., *The Periphery of the Mycenaean World, 2nd International Interdisciplinary Colloquium*. Lamia: Ypourgeio Politismou, pp. 15–24.

- Finley, M. I., 1978. *The World of Odysseus*, 2nd rev. ed. London: Penguin.
- Fitton, J. L., ed., 2009. *The Aigina Treasure: Aegean Bronze Age Jewellery and a Mystery Revisited*. London: British Museum Press.
- Fitton, J. L., N. Meeks, and L. Joyner, 2009. "The Aigina Treasure: Catalogue and Technical Report," in J. L. Fitton, ed., *The Aigina Treasure: Aegean Bronze Age Jewellery and a Mystery Revisited*. London: British Museum Press, pp. 17–31.
- Folk, R. L., 1980. *Petrology of Sedimentary Rocks*. Austin: University of Texas Press.
- Forstenpointner, G., A. Galik, G. Weissengruber, S. Zohmann, U. Thanheiser, and W. Gauß, 2010. "Subsistence and More in Middle Bronze Age Kolonna: Patterns of Husbandry, Hunting and Agriculture," in A. Philippa-Touchais, G. Touchais, S. Voutsaki, and J. Wright, eds., *Mesohelladika: Le Grèce Continentale au Bronze Moyen*. *Bulletin de Correspondance Hellénique Supplément* 52, pp. 733–42.
- Fotou, V., 1993. *New Light on Gournia, Aegaeum* 9. Liège: Université de Liège.
- Frake, C. O., 1985. "Cognitive Maps of Time and Tide Among Medieval Seafarers," *Man* 20: 254–70.
- French, E. B., 2002. *Mycenae: Agamemnon's Capital. The Site in its Setting*. Gloucestershire: Tempus Publishing Ltd.
- French, E. B., S. E. Iakovidis, C. Ioannides, A. Jansen, J. Lavery, and K. Shelton, 2003. *Archaeological Atlas of Mycenae*. *Archaeological Society of Athens Library* 229. Athens: Archaeological Society of Athens.
- Frieman, C., 2008. "Landscapes and 'Islandness': The Prehistoric Isle of Man in the Irish Seascape," *Oxford Journal of Archaeology* 27: 135–51.
- Galaty, M. L., 1999. "Wealth Ceramics, Staple Ceramics: Pots and the Mycenaean Palaces," in M. L. Galaty and W. A. Parkinson, eds., *Rethinking Mycenaean Palaces: New Interpretations of an Old Idea*. Los Angeles: Cotsen Institute of Archaeology, pp. 49–59.
- Galaty, M. L., in press. "'An Offense to Honor is Never Forgiven...': Violence and Landscape Archaeology in Highland Northern Albania," in S. Ralph, ed., *The Archaeology of Violence: An Integrated Approach to the Study of Violence and Conflict*. Buffalo: Institute for European and Mediterranean Archaeology.

- Galaty, M. L., W. E. Lee, C. Watkinson, Z. Tafilica, and O. Lafe, 2009. "Fort, Tower, or House? Building a Landscape of Settlement in the Shala Valley of High Albania," *Internet Archaeology* 27. http://intarch.ac.uk/journal/issue27/galaty_toc.html (accessed 8 April 2011).
- Galaty, M. L., and W. A. Parkinson, 2007. "2007 Introduction," in M. L. Galaty and W. A. Parkinson, eds., *Rethinking Mycenaean Palaces II: Revised and Expanded Edition*. Los Angeles: Cotsen Institute of Archaeology, pp. 1–17.
- Galaty, M. L., W. A. Parkinson, J. F. Cherry, E. H. Cline, P. N. Kardulias, R. Schon, S. Sherratt, H. Tomas, and D. Wengrow, 2009. "Interaction amidst Diversity: An Introduction to the Eastern Mediterranean Bronze Age," in W. A. Parkinson and M. L. Galaty, eds., *Archaic State Interaction: The Eastern Mediterranean in the Bronze Age*. Santa Fe: School for Advanced Research Press, pp. 29–51.
- Galik, A., S. Zohmann, G. Forstenpointner, G. E. Weissengruber, and W. Gauß, 2010. "Subsistence and More in Middle Bronze Age Aegina Kolonna: Exploitation of Marine Resources," in A. Philippa-Touchais, G. Touchais, S. Voutsaki, and J. Wright, eds., *Mesohelladika: Le Grèce Continentale au Bronze Moyen. Bulletin de Correspondance Hellénique Supplément* 52, pp. 743–51.
- Gauß, W., 2006. "Minos auf Ägina – Beobachtungen zu den Beziehungen Äginas zu Kreta," in E. Czerny, I. Hein, H. Hunger, D. Melman, and A. Schwab, eds., *Timelines: Festschrift für Manfred Bietak*. Leuven: Peeters, pp. 435–446.
- Gauß, W., and R. Smetana, 2007. "Aegina Kolonna, the Ceramic Sequence of the SCIEM 2000 Project," in F. Felten, W. Gauß, and R. Smetana, eds., *Middle Helladic Pottery and Synchronisms. Proceedings of the International Workshop held at Salzburg, October 31st–November 2nd, 2004*. Vienna: Verlag der Österreichischen Akademie der Wissenschaften, pp. 57–80.
- Gauß, W., and R. Smetana, 2008. "Aegina Kolonna and the Cyclades," in N. Brodie, J. Doole, G. Gavalas, and C. Renfrew, eds., *Horizon: A Colloquium on the Prehistory of the Cyclades*. Cambridge: McDonald Institute for Archaeological Research, pp. 325–38.
- Gauß, W., and R. Smetana, 2010. "Aegina Kolonna in the Middle Bronze Age," in A. Philippa-Touchais, G. Touchais, S. Voutsaki, and J. Wright, eds., *Mesohelladika: Le Grèce Continentale au Bronze Moyen. Bulletin de Correspondance Hellénique Supplément* 52, pp. 165–74.
- Gell, A., 1985. "How to Read a Map: Remarks on the Practical Logic of

- Navigation,” *Man* 20: 271–86.
- Giddens, A., 1979. *Central Problems in Social Theory: Action, Structure, and Contradiction in Social Analysis*. Berkeley: University of California Press.
- Giddens, A., 1984. *The Constitution of Society: Outline of the Theory of Structuration*. Cambridge: Polity Press.
- Gladwin, T., 1970. *East is a Big Bird: Navigation and Logic on Puluwat Atoll*. Cambridge, MA: Harvard University Press.
- Goiran, J.-P., and C. Morhange, 2003 [2001]. “Géoarchéologie des Ports Antiques de Méditerranée: Problématiques et Étude de Cas,” *Topoi* 11: 647–69.
- Goodenough, W. H., and S. D. Thomas, 1987. “Traditional Navigation in the Western Pacific: A Search for Pattern,” *Expedition* 29(3): 3–14.
- Goodman, B. N., E. G. Reinhardt, H. W. Dey, J. I. Boyce, H. P. Schwarcz, V. Saholu, H. Erkanal, and M. Artzy, 2008. “Evidence for Holocene Marine Transgression and Shoreline Progradation Due to Barrier Development in Iskele, Bay of Izmir, Turkey,” *Journal of Coastal Research* 24: 1269–80.
- Goodman, B. N., E. G. Reinhardt, H. W. Dey, J. I. Boyce, H. P. Schwarcz, V. Saholu, H. Erkanal, and M. Artzy, 2009. “Multi-proxy Geoarchaeological Study Redefines Understanding of the Paleocoastlines and Ancient Harbours of Liman Tepe (Iskele, Turkey),” *Terra Nova* 21(2): 97–104.
- Gould, R. A., 2000. *Archaeology and the Social History of Ships*. Cambridge: Cambridge University Press.
- Graziadio, G., 1988. “The Chronology of the Graves of Circle B at Mycenae: A New Hypothesis,” *American Journal of Archaeology* 92: 343–72.
- Greaves, A. M., 2002. *Miletos: A History*. London: Routledge.
- Greenhill, B., and J. Morrison, 1995. *The Archaeology of Boats and Ships: An Introduction*. Annapolis: Naval Institute Press.
- Grove, A. T., and O. Rackham, 2001. *The Nature of Mediterranean Europe: An Ecological History*. New Haven: Yale University Press.
- Günter, W., 2000. *Figürlich Bemalte Mykenische Keramik aus Tiryns. Tiryns XII*. Darmstadt: Philipp von Zabern.
- Güterbock, H. G., 1983. “The Hittites and the Aegean World, 1. The Ahhiyawa Problem Reconsidered,” *American Journal of Archaeology*

- Hadjidaki, E., 2004. "A Possible Minoan Harbor on South Crete," in L. P. Day, M. S. Mook, and J. D. Muhly, eds., *Crete Beyond the Palaces: Proceedings of the Crete 2000 Conference*. Philadelphia: INSTAP Academic Press, pp. 53–60.
- Hadjidaki, E., and P. Betancourt, 2005–2006. "A Minoan Shipwreck off Pseira Island, East Crete. Preliminary Report," *Eulimene* 6–7: 79–96.
- Hadjidaki, E., and P. Betancourt, 2006. "To Proto Minoiko Navagio," *Kritiko Panorama* 16 (Ioulios–Avgoustos): 20–38.
- Hage, P., and F. Harary, 1996. *Island Networks: Communication, Kinship, and Classification Structures in Oceania. Structural Analysis in the Social Sciences* 11. Cambridge: Cambridge University Press.
- Hage, P., and J. Marck, 2002. "Proto-Micronesian Kin Terms, Descent Groups, and Interisland Voyaging," *Oceanic Linguistics* 41: 159–70.
- Haggis, D. C., 2002. "Integration and Complexity in the Late Prepalatial Period: A View from the Countryside in Eastern Crete," in Y. Hamilakis, ed., *Labyrinth Revisited: Rethinking "Minoan" Archaeology*. Oxford: Oxbow Books, pp. 120–42.
- Haggis, D. C., 2003. Review of J. W. Shaw and M. C. Shaw, *Kommos IV: The Greek Sanctuary*, in *Bryn Mawr Classical Review* 2003.06.18. <http://bmcr.brynmawr.edu/2003/2003-06-18.html> (accessed 23 August 2010).
- Hahmann, A. N., D. Rostkier-Edelstein, T. T. Warner, Y. Liu, F. Vandenberghe, and S. P. Swerdlin, 2008. "Toward a Climate Downscaling for the Eastern Mediterranean at High-Resolution," *Advances in Geosciences* 12: 159–64.
- Haldane, C., 1993. "Direct Evidence for Organic Cargoes in the Late Bronze Age," *World Archaeology* 24: 348–60.
- Hale, J. R., 2009. *Lords of the Sea: The Epic Story of the Athenian Navy and the Birth of Democracy*. New York: Viking.
- Halstead, P., 1987. "Traditional and Ancient Rural Economy in Mediterranean Europe: Plus Ça Change?" *Journal of Hellenic Studies* 107: 77–87.
- Halstead, P., 1992a. "The Mycenaean Palatial Economy: Making the Most of the Gaps in the Evidence," *Proceedings of the Cambridge Philological Society* 38: 57–86.

Halstead, P., 1992b. "Agriculture in the Bronze Age Aegean: Towards a Model of Palatial Economy," in B. Wells, ed., *Agriculture in Ancient Greece*. Stockholm: Svenksa Institutet i Athen, pp. 105–17.

Halstead, P., 1999. "Towards a Model of Mycenaean Palatial Mobilization," in M. L. Galaty and W. A. Parkinson, eds., *Rethinking Mycenaean Palaces: New Interpretations of an Old Idea*. Los Angeles: Cotsen Institute of Archaeology, pp. 35–41.

Halstead, P., 2000. "Land Use in Postglacial Greece: Cultural Causes and Environmental Effects," in P. Halstead and C. Frederick, eds., *Landscape and Land Use in Postglacial Greece. Sheffield Studies in Aegean Archaeology 3*. Sheffield: Sheffield Academic Press, pp. 110–128.

Halstead, P., 2001. "Mycenaean Wheat, Flax and Sheep: Palatial Intervention in Farming and its Implications for Rural Society," in S. Voutsaki and J. Killen, eds., *Economy and Politics in the Mycenaean Palace States. Proceedings of a Conference Held on 1–3 July 1999 in the Faculty of Classics*. Cambridge: Cambridge Philological Society, pp. 38–50.

Halstead, P., 2011. "Redistribution in Aegean Palatial Societies: Terminology, Scale, and Significance," *American Journal of Archaeology* 115: 229–35.

Hamblin, W. K., and E. H. Christiansen, 1998. *Earth's Dynamic Systems*, 8th ed. Saddle River, NJ: Prentice-Hall, Inc.

Hamilakis, Y., 2003. "Animal Sacrifice and Mycenaean Societies: Preliminary Thoughts on the Zooarchaeological Evidence from the Sanctuary at Ag. Konstantinos, Methana," in E. Konsolaki-Yiannopoulou, ed., *Argosaronikos. Praktika Iou Diethnous Synedriou Istorias kai Archaialogias tou Argosaronikou, Poros, 26–29 Iouniou 1998*. Athens: Demos Porou, pp. 249–56.

Hamilakis, Y., and E. Konsolaki, 2004. "Pigs for the Gods: Burnt Animal Sacrifices as Embodied Rituals at a Mycenaean Sanctuary," *Oxford Journal of Archaeology* 23: 135–51.

Hankey, V., 1967. "Mycenaean Pottery in the Middle East," *Annual of the British School at Athens* 62: 107–47.

Hankey, V., 1981. "The Aegean Interest in El Amarna," *Journal of Mediterranean Anthropology and Archaeology* 1: 38–49.

Harris, W. V., 2005. "The Mediterranean and Ancient History," in W. V. Harris, ed., *Rethinking the Mediterranean*. Oxford: Oxford

- University Press, pp. 1–42.
- Hartenberger, B., and C. Runnels, 2001. “The Organization of Flaked Stone Production at Bronze Age Lerna,” *Hesperia* 70: 255–83.
- Haskell, H. W., R. E. Jones, P. M. Day, and J. T. Killen, 2011. *Transport Stirrup Jars of the Bronze Age Aegean and East Mediterranean. Prehistory Monographs* 33. Philadelphia: INSTAP Academic Press.
- Hayward, C. L., 2003. “Geology of Corinth: The Study of a Basic Resource,” in C. K. Williams II and N. Bookidis, eds., *Corinth, the Centenary 1896–1996*. Princeton: American School of Classical Studies at Athens, pp. 15–42.
- Hedges, R. E. M., 2004. “Isotopes and Red Herrings: Comments on Milner, et al.,” *Antiquity* 78: 34–37.
- Heikell, R., 2002. *West Aegean: The Attic Coast, East Peloponnese and Western Cyclades*. St. Ives: Imray Laurie Norie & Wilson Ltd.
- Heikell, R., 2007. *Greek Waters Pilot: A Yachtsman's Guide to the Ionian and Aegean Coasts and Islands of Greece*, 10th ed. St. Ives: Imray Laurie Norie & Wilson Ltd.
- Hein, A., A. Tsokalidou, and H. Mommsen, 2002. “Mycenaean Pottery from the Argolid and Achaia – A Mineralogical Approach where Chemistry Leaves Unanswered Questions,” *Archaeometry* 44: 177–86.
- Helms, M. W., 1988. *Ulysses' Sail: An Ethnographic Odyssey of Power, Knowledge, and Geographical Distance*. Princeton: Princeton University Press.
- Herda, A., H. Brückner, and M. Müllenhoff, 2009. “Geoarchaeology in the City of Thales – Deciphering Paleogeographic Changes in the Agora Area of Miletus,” in T. Mattern and A. Vött, eds., *Mensch und Umwelt im Spiegel der Zeit, Aspekte Geoarchäologischer Forschungen im Östlichen Mittelmeergebiet, Philippika*. Wiesbaden: Marburger Altertumswissenschaftliche Abhandlung, pp. 95–108.
- Heslenfeld, P., P. D. Jungerius, and J. A. Klijn, 2004. “European Coastal Dunes: Ecological Values, Threats, Opportunities and Policy Developments,” in M. L. Martínez and N. P. Psuty, eds., *Coastal Dunes: Ecology and Conservation. Ecological Studies* 171. Berlin: Springer Verlag, pp. 335–47.
- Higgins, R. A., 1979. *The Aegina Treasure: An Archaeological Mystery*. London: British Museum Press.
- Hiller, S., 1989. “On the Origins of the Shaft Graves,” in R. Laffineur, ed., *Transitions: Le Monde Égéen du Bronze Moyen au Bronze Récent*,

- Hiller, S., 1993. "Minoan and Minoanizing Pottery on Aegina," in C. Zerner, P. Zerner, and J. Winder, eds., *Wace and Blegen: Pottery as Evidence for Trade in the Aegean Bronze Age, 1939–1989*. Amsterdam: J. C. Gieben, pp. 197–99.
- Hiller, S., 2009. "Ornaments from the Warrior Grave and the Aigina Treasure," in J. L. Fitton, ed., *The Aigina Treasure: Aegean Bronze Age Jewellery and a Mystery Revisited*. London: British Museum Press, pp. 36–39.
- Höckmann, O., 2001. "The Kynos Sea-Fighters: Exception or Rule?," in H. Tzalas, ed., *Tropis VI. Sixth International Symposium on Ship Construction in Antiquity, Lamia, 28, 29, 30 August 1996*. Athens: Hellenic Institute for the Preservation of Nautical Tradition, pp. 223–34.
- Hodder, I., 1997. "'Always Momentary, Fluid and Flexible': Towards a Reflexive Excavation Methodology," *Antiquity* 71: 691–700.
- Hodder, I., 1998. *The Archaeological Process: Towards a Reflexive Methodology*. Oxford: Blackwell.
- Hodder, I., ed., 2000. *Towards Reflexive Method in Archaeology: The Example at Çatalhöyük*. British Institute of Archaeology at Ankara, Monograph 28. Cambridge: Cambridge University Press.
- Homar, V., A. Jansà, J. Campins, A. Genovés, and C. Ramis, 2007. "Towards a Climatology of Sensitivities of Mediterranean High Impact Weather: A Contribution Based on Intense Cyclones," *Natural Hazards and Earth System Sciences* 7, 445–54.
- Hope Simpson, R., 1981. *Mycenaean Greece*. Park Ridge, NJ: Noyes Press.
- Horden, P., and N. Purcell, 2000. *The Corrupting Sea: A Study of Mediterranean History*. Oxford: Blackwell.
- Hruby, J. A., 2006. *Feasting and Ceramics. A View from the Palace of Nestor at Pylos*. Unpublished Ph.D. dissertation, University of Cincinnati.
- Hyder, P., J. H. Simpson, and S. Christopoulos, 2002. "Sea-Breeze Forced Diurnal Surface Currents in the Thermaikos Gulf, North-West Aegean," *Continental Shelf Research* 22: 585–601.
- Iacovou, M., 2006. "From the Mycenaean *qa-si-re-u* to the Cypriote *pa-si-le-wo-se*: The *Basileus* in the Kingdoms of Cyprus," in S. Deger-

- Jalkotzy and I. S. Lemos, eds., *Ancient Greece: From the Mycenaean Palaces to the Age of Homer. Edinburgh Leventis Studies 3*. Edinburgh: Edinburgh University Press, pp. 315–35.
- Iacovou, M., 2008a. “Cultural and Political Configurations in Iron Age Cyprus: The Sequel to a Protohistoric Episode,” *American Journal of Archaeology* 112: 625–57.
- Iacovou, M., 2008b. “Cyprus: From Migration to Hellenisation,” in G. R. Tsetschladze, ed., *Greek Colonisation: An Account of Greek Colonies and Other Settlements Overseas*, vol. 2. Leiden: Brill, pp. 219–88.
- Iakovidis, S. E., 1989. *Glas I: I Anaskaphi 1955–1961*. Athens: Athens Archaeological Society.
- Iakovidis, S. E., 2001. *Gla and the Kopais in the 13th Century B.C.* Athens: Archaeological Society at Athens.
- Ilves, K., 2009. “Discovering Harbours? Reflection on the State and Development of Landing Site Studies in the Baltic Region,” *Journal of Maritime Archaeology* 4: 149–63.
- Jing, Z., and G. Rapp, 2003. “The Coastal Evolution of the Ambracian Embayment and Its Relationship to Archaeological Settings,” in J. Wiseman and K. Zachos, eds., *Landscape Archaeology in Southern Epirus, Greece I. Hesperia Supplement 32*. Princeton: American School of Classical Studies at Athens, pp. 157–98.
- Jones, D., 1995. *Boats*. Austin: University of Texas Press.
- Judas, B. E., 2011. *Late Bronze Age Aegean Ceramics in the Nile Valley: An Analysis of Idea and Practice Represented in the Archaeological Record*. Unpublished Ph.D. dissertation, University of Pennsylvania.
- Kahanov, Y., 2001. “The Byzantine Shipwreck (Tantura A) in the Tantura Lagoon, Israel: Hull Construction Report,” in H. Tzalas, ed., *Tropis VI. Sixth International Symposium on Ship Construction in Antiquity, Lamia, 28, 29, 30 August 1996*. Athens: Hellenic Institute for the Preservation of Nautical Tradition, pp. 265–71.
- Kahanov, Y., 2009. “The Tantura Lagoon (Dor) Shipwrecks,” paper presented at the 110th Annual Meeting of the Archaeological Institute of America, Philadelphia, January 8–11, 2009 (*110th Annual Meeting Abstracts*. Boston: AIA, pp. 33–34).
- Kantor, H., 1947. *The Aegean and the Orient in the Second Millennium B.C. Archaeological Institute of America Monograph 1*. New York: Archaeological Institute of America.

- Kanz, F., K. Grossschmidt, and J. Kiesslich, 2010. "Subsistence and More in Middle Bronze Age Aegina Kolonna: An Anthropology of Newborn Children," in A. Philippa-Touchais, G. Touchais, S. Voutsaki, and J. Wright, eds., *Mesohelladika: Le Grèce Continentale au Bronze Moyen. Bulletin de Correspondance Hellénique Supplément 52*, pp. 479–87.
- Karakatsianis, I., 2010. "A Clan-Based Society of South Greece and its Militarization after the Second World War: Some Characteristics of Violence and the Construction of Habitus in the South Peloponnese," *History and Anthropology* 21: 121–38.
- Karaminou, D., 2002. "On the Form of Mycenaean Ships," in H. Tzalas, ed., *Tropis VII. Seventh International Symposium on Ship Construction in Antiquity, Pylos, 26, 27, 28, 29 August 1999*. Athens: Hellenic Institute for the Preservation of Nautical Tradition, pp. 445–60.
- Kardulias, P. N., 1996. "Multiple Levels in the Aegean Bronze Age World-System," *Journal of World-Systems Research* 2(11): 1–36.
- Kardulias, P. N., 1999. "Flaked Stone and the Role of the Palaces in the Mycenaean World System," in M. L. Galaty and W. A. Parkinson, eds., *Rethinking Mycenaean Palaces: New Interpretations of an Old Idea*. Los Angeles: Cotsen Institute of Archaeology, pp. 61–72.
- Kardulias, P. N., 2000. "Adaptation on Arid Islands: A Study of Herders on Dokos, Greece," *Near Eastern Archaeology* 63(1): 35–44.
- Kardulias, P. N., 2007. "Negotiation and Incorporation on the Margins of World-Systems: Examples from Cyprus and North America," *Journal of World-Systems Research* 13: 55–82.
- Kardulias, P. N., 2009. "World-Systems Applications for Understanding the Bronze Age in the Eastern Mediterranean," in W. A. Parkinson and M. L. Galaty, eds., *Archaic State Interaction: The Eastern Mediterranean in the Bronze Age*. Santa Fe: School for Advanced Research Press, pp. 53–80.
- Kardulias, P. N., T. E. Gregory, and J. Sawmiller, 1995. "Bronze Age and Late Antique Exploitation of an Islet in the Saronic Gulf, Greece," *Journal of Field Archaeology* 22: 3–21.
- Kardulias, P. N., and C. Runnels, 1995. "Flaked Stone and Other Nonflaked Lithics," in C. Runnels, D. J. Pullen, and S. Langdon, eds., *Artifact and Assemblage: The Finds from a Regional Survey of the Southern Argolid, Greece*. Stanford: Stanford University Press, pp. 74–139.

- Kayan, , E. Öner, L. Uncu, B. Hocaolu, and S. Vardar, 2003. "Geoarchaeological Interpretations of the 'Troian Bay'," in G. A. Wagner, E. Pernicka, and H.-P. Uerpmann, eds., *Troia and the Troad: Scientific Approaches*. Berlin: Springer Verlag, pp. 379–401.
- Keay, S., G. Earl, S. Hay, S. Kay, J. Ogden, and K. D. Strutt, 2009. "The Role of Integrated Geophysical Survey Methods in the Assessment of Archaeological Landscapes: The Case of Portus," *Archaeological Prospection* 16: 154–66.
- Kelder, J. M., 2009. "Royal Gift Exchange between Mycenae and Egypt: Olives as 'Greeting Gifts' in the Late Bronze Age Eastern Mediterranean," *American Journal of Archaeology* 113: 339–52.
- Kelletat, D., 2006. "Beachrock as Sea-Level Indicator? Remarks from a Geomorphological Point of View," *Journal of Coastal Research* 22(6): 1558–64.
- Kilian, K., 1988. "The Emergence of Wanax Ideology in the Mycenaean Palaces," *Oxford Journal of Archaeology* 7: 291–302.
- Kilian, K., 1990. "Mycenaean Colonization: Norm and Variety," in J.-P. Descoeudres, ed., *Greek Colonies and Native Populations*. Canberra: Humanities Research Centre, pp. 445–67.
- Kilian-Dirlmeier, I., 1997. *Das Mittelbronzezeitliche Schachtgrab von Ägina*. Mainz: Philipp von Zabern.
- Killen, J. T., 1983. "PY An 1," *Minos* 18: 71–79.
- Killen, J. T., 1985. "The Linear B Tablets and the Mycenaean Economy," in A. Morpurgo-Davies and Y. Duhoux, eds., *Linear B: A 1984 Review*. Louvain-la-Neuve: Cabay, pp. 241–305.
- Knapp, A. B., 1991. "Spice, Drugs, Grain and Grog: Organic Goods in Bronze Age Eastern Mediterranean Trade," in N. Gale, ed., *Bronze Age Trade in the Mediterranean. Papers Presented at the Conference held at Rewley House, Oxford, in December 1989*. Jonsered: Paul Åströms Förlag, pp. 19–66.
- Knapp, A. B., 1993. "Thalassocracies in Bronze Age Eastern Mediterranean Trade: Making and Breaking a Myth," *World Archaeology* 24: 332–47.
- Knapp, A. B., 1997. "Mediterranean Bronze Age Trade: Distance, Power and Place," in R. Laffineur and P. P. Betancourt, eds., *Techne: Craftsmen, Craftswomen and Craftsmanship in the Aegean Bronze Age, Aegaeum* 16. Liège: Université de Liège, pp. 193–207.

Knapp, A. B., and J. F. Cherry, 1994. *Provenance Studies and Bronze Age Cyprus: Production, Exchange, and Politico-Economic Change*. Madison, WI: Prehistory Press.

Knappett, C., 2001. "Overseen or Overlooked? Ceramic Production in a Mycenaean Palatial System," in S. Voutsaki and J. Killen, eds., *Economy and Politics in the Mycenaean Palace States: Proceedings of a Conference held on 1–3 July 1999 in the Faculty of Classics*. Cambridge: Cambridge Philological Society, pp. 80–95.

Knappett, C., T. Evans, and R. Rivers, 2008. "Modelling Maritime Interaction in the Aegean Bronze Age," *Antiquity* 82: 1009–24.

Knappett, C., T. Evans, and R. Rivers, 2011. "The Theran Eruption and Minoan Palatial Collapse: New Interpretations Gained from Modelling the Maritime Network," *Antiquity* 85: 1008–23.

Knauss, J., 2001. *Späthelladische Wasserbauten: Erkundungen zu Wasserwirtschaftlichen Infrastrukturen der Mykenischen Welt*. Munich: Technische Universität München.

Knipping, M., M. Müllenhoff, and H. Brückner, 2008. "Human Induced Landscape Changes around Bafa Gölü (Western Turkey)," *Vegetation History and Archaeobotany* 17: 365–80.

Koehl, R. B., 2011. "South Levantine Middle Bronze Age Gold-work in the Aegean," in M. Andreadaki-Vlazi, ed., *Pepragmena: 1' Diethnous Kritologikou Synedriou, Chania, 1–8 Oktovriou 2006*. Chania: Filosofikos Syllogos "O Chrysostomos," pp. 189–208.

Konsola, D., 1986. "Stages in Urban Transformation in the Early Helladic Period," in R. Hägg & D. Konsola, eds., *Early Helladic Architecture and Urbanization, Proceedings of a Seminar held at the Swedish Institute in Athens, June 8, 1985*. Göteborg: Paul Åströms Förlag, pp. 9–19.

Konsolaki-Yiannopoulou, E., 1999. "A Group of New Mycenaean Horsemen from Methana," in P. P. Betancourt, V. Karageorghis, R. Laffineur, and W.-D. Niemeier, eds., *Meletemata: Studies in Aegean Archaeology Presented to Malcolm H. Wiener as He Enters His 65th Year*, *Aegaeum* 20. Liège: Université de Liège, pp. 427–33.

Konsolaki-Yiannopoulou, E., 2001. "New Evidence for the Practice of Libations in the Aegean Bronze Age," in R. Laffineur and R. Hägg, eds., *Potnia: Deities and Religion in the Aegean Bronze Age*, *Aegaeum* 22. Liège: Université de Liège, pp. 213–20.

Konsolaki-Yiannopoulou, E., 2002. "A Mycenaean Sanctuary on Methana," in R. Hägg, ed., *Peloponnesian Sanctuaries and Cults*:

- Konsolaki-Yiannopoulou, E., 2003a. “I Magoula ston Galata tis Troizinias: Ena Neo ME–YE Kentro ston Saroniko,” in E. Konsolaki-Yiannopoulou, ed., *Argosaronikos. Praktika Iou Diethnous Synedriou Istorias kai Archaialogias tou Argosaronikou, Poros, 26–29 Iouniou 1998*. Athens: Demos Porou, pp. 159–228.
- Konsolaki-Yiannopoulou, E., 2003b. “Ta Mykinaïka Eidolia apo ton Ayio Konstantino Methanon,” in E. Konsolaki-Yiannopoulou, ed., *Argosaronikos. Praktika Iou Diethnous Synedriou Istorias kai Archaialogias tou Argosaronikou, Poros, 26–29 Iouniou 1998*. Athens: Demos Porou, pp. 375–406.
- Konsolaki-Yiannopoulou, E., 2010. “The Middle Helladic Establishment at Megali Magoula, Galatas (Troizinia),” in A. Philippa-Touchais, G. Touchais, S. Voutsaki, and J. Wright, eds., *Mesohelladika: Le Grèce Continentale au Bronze Moyen. Bulletin de Correspondance Hellénique Supplément 52*, pp. 67–76.
- Korres, G. S., 1989. “Representations of a Late Mycenaean Ship on the Pyxis from Tragana, Pylos,” in H. Tzalas, ed., *Tropis I. First International Symposium on Ship Construction in Antiquity, Piraeus, 30 August–1 September 1985*. Athens: Hellenic Institute for the Preservation of Nautical Tradition, pp. 177–202.
- Kourafalou, V. H., 2007. “On the Dardanelles Outflow in the Aegean Sea: Implications on the Basin-Wide Circulation and Operational Modeling,” *Rapport de la Commission Internationale pour la Mer Méditerranée* 38: 68.
- Kourafalou, V. H., and K. Barbopoulos, 2003. “High Resolution Simulations of the North Aegean Seasonal Circulation,” *Annales Geophysicae* 21: 251–65.
- Kourafalou, V. H., and K. P. Tsiaras, 2006. “A Nested Circulation Model for the North Aegean Sea,” *Ocean Science Discussions* 3: 343–72.
- Kraft, J. C., I. Kayan, H. Brückner, and G. Rapp, 2000. “A Geologic Analysis of Ancient Landscapes and the Harbors of Ephesus and the Artemesion in Anatolia,” *Jahreshefte des Österreichischen Archäologischen Instituts in Wien* 69: 175–233.
- Kraft, J. C., I. Kayan, H. Brückner, and G. Rapp, 2003. “Sedimentary

- Facies Patterns and the Interpretation of Paleogeographies of Ancient Troia,” in G. A. Wagner, E. Pernicka, and H.-P. Uerpmann, eds., *Troia and the Troad: Scientific Approaches*. Berlin: Springer Verlag, pp. 361–77.
- Kraft, J. C., G. R. Rapp, and S. E. Aschenbrenner, 1980. “Late Holocene Palaeogeomorphic Reconstruction in the Area of the Bay of Navarino: Sandy Pylos,” *Journal of Archaeological Science* 7: 187–210.
- Kraft, J. C., G. Rapp, J. A. Gifford, and S. E. Aschenbrenner, 2005. “Coastal Change and Archaeological Settings in Elis,” *Hesperia* 74: 1–39.
- Kraft, J. C., G. Rapp, I. Kayan, and J. V. Luce, 2003. “Harbor Areas at Ancient Troy: Sedimentology and Geomorphology Complement Homer's *Iliad*,” *Geology* 31(2): 163–66.
- Kramer-Hajos, M., 2008. *Beyond the Palace: Mycenaean East Lokris*. BAR International Series 1781. Oxford: Archaeopress.
- Kvamme, K., 2003. “Geophysical Surveys as Landscape Archaeology,” *American Antiquity* 68: 435–57.
- Kvapil, L., 2012. *The Cultivation Terraces of Korphos-Kalamianos: A Case Study of the Dynamic Relationship between Land Use and Socio-economic Organization in Prehistoric Greece*. Unpublished Ph.D. dissertation, University of Cincinnati.
- Lackenbacher, S., and F. Malbran-Labat, 2005. “Ugarit et les Hittites dans les Archives de la “Maison d’Urtenu,” *Studi Micenei ed Egeo-Anatolici* 47: 227–40.
- Lafferty, B., R. Quinn, and C. Breen, 2006. “A Side-Scan Sonar and High-Resolution Chirp Sub-Bottom Profile Study of the Natural and Anthropogenic Sedimentary Record of Lower Lough Erne, Northwestern Ireland,” *Journal of Archaeological Science* 33: 756–66.
- Lambeck, C., 1995. “Late Pleistocene and Holocene Sea-Level Changes in Greece and Southern Turkey: A Separation of Eustatic, Isostatic, and Tectonic Contributions,” *Geophysical Journal International* 122: 1022–44.
- Lambeck, C., 1996. “Sea-Level Change and Shoreline Evolution: A General Framework of Modelling and Its Application to Aegean Greece Since Upper Palaeolithic Time,” *Antiquity* 70: 588–611.
- Lambropoulou, A., 1991. *The Middle Helladic Period in the Corinthia and the Argolid*. Unpublished Ph.D. dissertation, Bryn Mawr College.
- Lambrou-Phillipson, C., 1990. *Hellenorientalia: The Near Eastern*

- Presence in the Bronze Age Aegean, ca. 3000–1100 B.C. SIMA-PB 95.*
Göteborg: Paul Åströms Förlag.
- Lambrou-Phillipson, C., 1991. "Seafaring in the Bronze Age Mediterranean: The Parameters Involved in Maritime Travel," in R. Laffineur and L. Basch, eds., *Thalassa: L'Égée Préhistorique et la Mer, Aegaeum 7*. Liège: Université de Liège, pp. 11–19.
- Latacz, J., 2004. *Troy and Homer: Towards a Solution of an Old Mystery*. New York: Oxford University Press.
- Leidwanger, J., 2011. *Maritime Archaeology as Economic History: Long-Term Trends of Roman Commerce in the Northeast Mediterranean*. Unpublished Ph.D. dissertation, University of Pennsylvania.
- Leonard, A., Jr., 1994. *An Index to the Late Bronze Age Aegean Pottery from Syria-Palestine, SIMA 114*. Jonsered: Paul Åströms Förlag.
- Lewis, D., 1976. "Observations on Route Finding and Spatial Orientation among the Aboriginal Peoples of the Western Desert Region of Central Australia," *Oceania* 46: 249–82.
- Lindblom, M. 2001. *Marks and Makers: Appearance, Distribution and Function of Middle and Late Helladic Manufacturers' Marks on Aeginetan Pottery, SIMA 128*. Jonsered: Paul Åströms Förlag.
- Lindblom, M., 2007. "Early Mycenaean Mortuary Meals at Lerna VI with Special Emphasis on their Aeginetan Components," in F. Felten, W. Gauß, and R. Smetana, eds., *Middle Helladic Pottery and Synchronisms. Ägina-Kolonna Forschungen und Ergebnisse I*. Vienna: Verlag der Österreichischen Akademie der Wissenschaften, pp. 115–35.
- Loader, N. C., 1998. *Building in Cyclopean Masonry, with Special Reference to the Mycenaean Fortifications on Mainland Greece*. Jonsered: Paul Åströms Förlag.
- Lohmann, H., 1995. "Survey in der Chora von Milet," *Archäologischer Anzeiger* 293–328.
- Lohmann, H., 1997. "Survey in der Chora von Milet: Vorbericht über die Kampagnen der Jahre 1994 und 1995," *Archäologischer Anzeiger* 285–311.
- Lohmann, H., 1999. "Survey in der Chora von Milet. Vorbericht über die Kampagnen der Jahre 1996 und 1997," *Archäologischer Anzeiger* 439–73.
- Lolos, Y., 2001. "Kaphereus and Kyme: Late Bronze Age Shipwrecks off Euboea," in H. Tzalas, ed., *Tropis VI. Sixth International Symposium on*

- Ship Construction in Antiquity, Lamia, 28, 29, 30 August 1996*. Athens: Hellenic Institute for the Preservation of Nautical Tradition, pp. 399–400.
- Lolos, Y., 2007. “To Mykinaiko Asty tis Salaminos,” in E. Konsolaki-Yiannopoulou, ed., *Epathlon: Archaialogiko Synedrio pros Timin tou Adonidos K. Kyrou, Poros, 7–9 Iouniou 2002*. Athens: Demos Porou, pp. 221–52.
- Lolos, Y., 2010. “Sklavos: Ena Mesoelladiko Orosimo sti Notia Akti tis Salaminos,” in A. Philippa-Touchais, G. Touchais, S. Voutsaki, and J. Wright, eds., *Mesohelladika: Le Grèce Continentale au Bronze Moyen. Bulletin de Correspondance Hellénique Supplément 52*, pp. 181–85.
- Loy, W. G., and H. E. Wright, Jr., 1972. “The Physical Setting,” in W.A. McDonald and G. R. Rapp, Jr., eds., *The Minnesota Messenia Expedition: Reconstructing a Bronze Age Regional Environment*. Minneapolis: University of Minnesota Press, pp. 36–46.
- Malkin, I., 2011. *A Small Greek World: Networks in the Ancient Mediterranean*. Oxford: Oxford University Press.
- Malkin, I., C. Constantakopoulou, and K. Panagopoulou, 2007. “Preface: Networks in the Ancient Mediterranean,” *Mediterranean Historical Review* 22: 1–9.
- Mangalakova, T., 2004. *The Kanun in Present-Day Albania, Kosovo, and Montenegro*. Sofia: International Centre for Minority Studies and Intercultural Relations.
- Manning, S. W., and L. Hulin, 2005. “Maritime Commerce and Geographies of Mobility in the Late Bronze Age of the Eastern Mediterranean: Problematizations,” in E. Blake and A. B. Knapp, eds., *The Archaeology of Mediterranean History*. Oxford: Blackwell Publishers, pp. 270–302.
- Maran, J., 1992. *Kiapha Thiti: Ergebnisse der Ausgrabungen II.2: 2. Jt. v. Chr: Keramik und Kleinfunde*. Marburger Winckelmann-Programm 1990. Marburg: Philipps-Universität.
- Maran, J., 1993. “Middle and Late Bronze Age Pottery from Kiapha Thiti (Attica): A Preliminary Report,” in C. Zerner, P. Zerner, and J. Winder, eds., *Wace and Blegen: Pottery as Evidence for Trade in the Aegean Bronze Age, 1939–1989*. Amsterdam: J. C. Gieben, pp. 201–207.
- Maran, J., 2001. “Political and Religious Aspects of Architectural Change on the Upper Citadel of Tiryns: The Case of Building T,” in R.

- Laffineur and R. Hägg, eds., *Potnia: Deities and Religion in the Aegean Bronze Age*, *Aegaeum* 22. Liège: Université de Liège, pp. 113–22.
- Maran, J., 2003. "Architektonische Innovation im Spätmykenischen Tiryns-Lokale Bauprogramme und Fremde Kultureinflüsse," in *Tagungsband Althellenische Technologie und Technik, 21–23 März 2003 in Ohlstadt, Deutschland*. Weilheim: Verien zur Förderung der Aufarbeitung der Hellenischen Geschichte, pp. 261–93.
- Maran, J., 2004. "The Spreading of Objects and Ideas in the Late Bronze Age Eastern Mediterranean: Two Case Examples from the Argolid of the 13th and 12th Centuries B.C.," *Bulletin of the American Schools of Oriental Research* 336: 11–30.
- Maran, J., 2005. "Late Minoan Coarse Ware Stirrup Jars on the Greek Mainland. A Postpalatial Perspective from the 12th Century BC Argolid," in A. L. D'Agata and J. Moody, eds., *Ariadne's Threads: Connections between Crete and the Greek Mainland in Late Minoan III (LM IIIA2 to LM IIIC)*. Athens: Scuola Archeologica Italiana di Atene, pp. 415–31.
- Maran, J., 2007. "Emulation of Aeginetan Pottery in the Middle Bronze Age of Coastal Thessaly: Regional Context and Social Meaning," in F. Felten, W. Gauß, and R. Smetana, eds., *Middle Helladic Pottery and Synchronisms. Ägina-Kolonna Forschungen und Ergebnisse I*. Vienna: Verlag der Österreichischen Akademie der Wissenschaften, pp. 167–82.
- Marchese, R. T., 1986. *The Lower Maeander Flood Plain*. *British Archaeological Reports International Series* 292. Oxford: British Archaeological Reports.
- Margariti, R. E., 1998. *The eytan Deresi Wreck and the Minoan Connection in the Eastern Aegean*. Unpublished M.A. thesis, Texas A & M University.
- Marinatos, S., 1926. "Excavations at Nirou Khani, Crete," *Praktika* 141–47.
- Marinatos, S., 1974a. *Excavations at Thera VI (1972 Season)*. Athens: Vivliothiki tis en Athinis Archaialogikis Etereias 64.
- Marinatos, S., 1974b. "Das Schiffsfresco von Akrotiri, Thera," in D. Gray, *Seewesen: Archaeologia Homerica I*. Göttingen: Vandenhoeck & Ruprecht, pp. 140–51.
- Mark, S., 2005. *Homeric Seafaring*. College Station: Texas A & M Press.

- Marriner, N., and C. Morhange, 2006. "Geoarchaeological Evidence for Dredging in Tyre's Ancient Harbour, Levant," *Quaternary Research* 65: 64–171.
- Marriner, N., and C. Morhange, 2007. "Geoscience of Ancient Mediterranean Harbours," *Earth-Science Reviews* 80: 137–94.
- Marriner, N., C. Morhange, and M. Saghie-Beydoun, 2008. "Geoarchaeology of Beirut's Ancient Harbour, Phoenicia," *Journal of Archaeological Science* 35: 2495–516.
- Martin, R., 1993. "Telemachus and the Last Hero Song," *Colby Quarterly* 29: 222–40.
- Martínez, M. L., N. P. Psuty, and R. A. Lubke, 2004. "A Perspective on Coastal Dunes," in M. L. Martínez and N. P. Psuty, eds., *Coastal Dunes: Ecology and Conservation. Ecological Studies* 171. Berlin: Springer Verlag, pp. 3–10.
- Mayhew, S., 2004. "North Atlantic Oscillation," *A Dictionary of Geography*. Oxford: Oxford University Press. <http://www.answers.com/topic/north-atlantic-oscillation> (retrieved from Answers.com 03 Mar. 2010).
- Mazarakis Ainian, A., 1997. *From Rulers' Dwellings to Temples: Architecture, Religion and Society in Early Iron Age Greece (1100–700 B.C.)*, SIMA 121. Jonsered: Paul Åströms Vörlag.
- McCoy, F., 1980. "Climatic Change in the Eastern Mediterranean Area during the Past 240,000 Years," in C. Doumas, ed., *Thera and the Ancient World II*. London: The Thera Foundation, pp. 79–100.
- McGrail, S., 1991. "Bronze Age Seafaring in the Mediterranean: A View from NW Europe," in N. Gale, ed., *Bronze Age Trade in the Mediterranean. Papers Presented at the Conference held at Rewley House, Oxford, in December 1989*. Jonsered: Paul Åströms Förlag, pp. 83–91.
- McGrail, S., 2001. *Boats of the World: From the Stone Age to Medieval Times*. Oxford: Oxford University Press.
- McGrail, S., 2006. *Ancient Boats and Ships*, 2nd ed. Princes Risborough: Shire Publications.
- McInerney, J., 2010. *The Cattle of the Sun: Cows and Culture in the World of the Ancient Greeks*. Princeton: Princeton University Press.
- Mee, C., 2008. "Mycenaean Greece, the Aegean and Beyond," in C. W. Shelmerdine, ed., *The Cambridge Companion to the Aegean Bronze Age*. Cambridge: Cambridge University Press, pp. 362–86.

- Mee, C., and G. Taylor, 1997. "Prehistoric Methana," in C. Mee and H. Forbes, eds., *A Rough and Rocky Place: The Landscape and Settlement History of the Methana Peninsula, Greece*. Liverpool: Liverpool University Press, pp. 42–56.
- Meiberg, L., 2011. *Figural Motifs on Philistine Pottery and Their Connections to the Aegean World, Cyprus, and Coastal Anatolia*. Unpublished Ph.D. dissertation, University of Pennsylvania.
- Middleton, G. D., 2010. *The Collapse of Palatial Society in LBA Greece and the Postpalatial Period*. *British Archaeological Reports International Series 2110*. Oxford: Archaeopress.
- Momigliano, N., 2005. "Iasos and the Aegean Islands before the Santorini Eruption," in R. Laffineur and E. Greco, eds., *Emporia: Aegeans in the Central and Eastern Mediterranean*, *Aegaeum* 25. Liège: Université de Liège, pp. 217–24.
- Mommsen, H., T. Beier, and A. Hein, 2002. "A Complete Chemical Grouping of the Berkeley Neutron Activation Analysis Data on Mycenaean Pottery," *Journal of Archaeological Science* 29: 613–37.
- Moody, J., 1997. "The Cretan Environment: Abused or Just Misunderstood?," in P. N. Kardulias and M. T. Shutes, eds., *Aegean Strategies: Studies of Culture and Environment on the European Fringe*. Lanham, MD: Rowan and Littlefield, pp. 61–78.
- Moody, J., 2000. "Holocene Climate Change in Crete: An Archaeologist's View," in P. Halstead and C. Frederick, eds., *Landscape and Land Use in Postglacial Greece*. Sheffield: Sheffield Academic Press, pp. 52–61.
- Morgan, C., 1999. *Isthmia VIII: The Late Bronze Age and Early Iron Age Sanctuary*. Princeton: American School of Classical Studies at Athens.
- Morgan, L., 1988. *The Miniature Wall Paintings of Thera: A Study in Aegean Culture and Iconography*. Cambridge: Cambridge University Press.
- Morgan Brown, L., 1978. "The Ship Procession in the 'Miniature Fresco'," in C. Doumas, ed., *Thera and the Aegean World I*. London: Thera and the Aegean World, pp. 629–44.
- Morhange, C., F. Blanc, M. Bourcier, P. Carbonel, A. Prone, S. Schmitt-Mercury, D. Vivent, and A. Hesnard, 2003. "Bio-sedimentology of the Late Holocene Deposits of the Ancient Harbor of Marseilles (Southern France, Mediterranean Sea)," *The Holocene* 13: 593–604.

- Morhange, C., J.-P. Goiran, M. Bourcier, P. Carbonel, J. Le Campion, J.-M. Rouchy, and M. Yon, 2000. "Recent Holocene Paleoenvironmental Evolution and Coastline Changes of Kition, Larnaca, Cyprus, Mediterranean Sea," *Marine Geology* 26: 205–30.
- Morris, I., 1987. *Burial and Society: Rise of the Greek City-State*. Cambridge: Cambridge University Press.
- Morris, I., 1997. "Homer and the Iron Age," in I. Morris and B. Powell, eds., *A New Companion to Homer*. Leiden: Brill, pp. 535–59.
- Morris, I., 1998. "Poetics of Power: The Interpretation of Ritual Action in Archaic Greece," in C. Dougherty and L. Kurke, eds., *Cultural Poetics in Archaic Greece: Cult, Performance, Politics*. New York: Oxford University Press, pp. 15–45.
- Morton, J., 2001. *The Role of the Physical Environment in Ancient Greek Seafaring*. Leiden: Brill.
- Mott, L., 1991. *The Development of the Rudder, A.D. 100–600: A Technological Tale*. Unpublished M.A. thesis, Texas A & M University.
- Mountjoy, P. A., 1990. "Regional Mycenaean Pottery," *Annual of the British School at Athens* 85: 245–270.
- Mountjoy, P. A., 1998. "The East Aegean-West Anatolian Interface in the Late Bronze Age," *Anatolian Studies* 48: 33–67.
- Mountjoy, P. A., 1999. *Regional Mycenaean Decorated Pottery*, vols. 1, 2. Rahden: Deutsches Archäologisches Institut, Verlag Marie Leidorf.
- Mountjoy, P. A., 2004. "Miletos: A Note," *Annual of the British School at Athens* 99: 189–200.
- Muckelroy, K., 1978. *Maritime Archaeology*. Cambridge: Cambridge University Press.
- Muhly, P., 1996. "Furniture from the Shaft Graves: The Occurrence of Wood in Aegean Burials of the Bronze Age," *Annual of the British School at Athens* 91: 197–211.
- Müllenhoff, M., H. Brückner, and M. Handl, 2005. "Geoarchaeological Evidence for Rapid Landscape Change in Western Turkey – The Example of the Maeander (Büyük Menderes) Delta," *Tübinger Geowissenschaftliche Abhandlung* A73. Tübingen: Geologische-Paläontologische Institut Universität Tübingen, pp. 77–78.
- Murnaghan, S., 2002. "The Trials of Telemachus: Who was the *Odyssey* Meant For?," *Arethusa* 35: 133–53.
- Murphy, J., 1998. "Ideologies, Rites and Rituals: A View of Prepalatial

- Minoan Tholoi,” in K. Branigan, ed., *Cemetery and Society in the Aegean Bronze Age*. Sheffield: Sheffield Academic Press, pp. 29–40.
- Mylonas, G. E., 1966. *Mycenae and the Mycenaean Age*. Princeton: Princeton University Press.
- Nakassis, D., 2006. *The Individual and the Mycenaean State: Agency and Prosopography in the Linear B Texts from Pylos*. Unpublished Ph.D. dissertation, University of Texas at Austin.
- Naval Research Laboratory, 2007. *European Severe Weather Port Guide*. Monterey, CA: Marine Meteorology Division, on-line version. http://199.9.2.143/port_studies/medports (retrieved 21 April 2010).
- Nelson, M. C., 2001. *The Architecture of Epiano Englianos, Greece*. Unpublished Ph.D. dissertation, University of Toronto.
- Newby, E., 1998 [1984]. *On the Shores of the Mediterranean*. London: Lonely Planet Publications. [first published 1984 by Harvil Press, London]
- Niemeier, W.-D., 1995. “Aegina – First Aegean ‘State’ Outside of Crete?,” in R. Laffineur and W.-D. Niemeier, eds., *Politeia: Society and State in the Aegean Bronze Age*. Liège: Université de Liège, pp. 73–80.
- Niemeier, W.-D., 1998. “The Mycenaean in Western Anatolia and the Problem of the Origins of the Sea People,” in S. Gitin, A. Mazar, and E. Stern, eds., *Mediterranean Peoples in Transition, Thirteenth to Early Tenth Centuries BCE. In Honor of Professor Trude Dothan*. Jerusalem: Israel Exploration Society, pp. 17–65.
- Niemeier, W.-D., 1999. “The Mycenaean Potter's Quarter at Miletus,” in P. P. Betancourt, V. Karageorghis, R. Laffineur, and W.-D. Niemeier, eds., *Meletemata: Studies in Aegean Archaeology Presented to Malcolm H. Wiener as He Enters His 65th Year, Aegaeum 20*. Liège: Université de Liège, pp. 347–51.
- Niemeier, W.-D., 2003. “Greek Territories and the Hittite Empire: Mycenaean and Hittites in West Asia Minor,” in N.C. Stampolidis, ed., *Sea Routes...From Sidon to Huelva, Interconnections in the Mediterranean 16th–6th C. BC*. Athens: Museum of Cycladic Art, pp. 103–107.
- Niemeier, W.-D., 2005. “The Minoans and Mycenaean in Western Asia Minor: Settlement, Emporia, or Acculturation?,” in R. Laffineur and E. Greco, eds., *Emporia: Aegeans in the Central and Eastern Mediterranean, Aegaeum 25*. Liège: Université de Liège, pp. 199–204.

- Niemi, T. M., and E. A. W. Finke, 1988. "The Application of Remote Sensing to Coastline Reconstruction in the Argive Plain, Greece," in A. Raban, ed., *The Archaeology of Coastal Changes. Proceedings of the First International Symposium "Cities of the Sea – Past and Present," Haifa, Israel, September 22–29, 1986. BAR International Series 404.* Oxford: BAR, pp. 119–36.
- Nikolakopoulou, I., 2007. "Aspects of Interaction between the Cyclades and the Mainland in the Middle Bronze Age," in F. Felten, W. Gauß, and R. Smetana, eds., *Middle Helladic Pottery and Synchronisms. Ägina-Kolonna Forschungen und Ergebnisse I.* Vienna: Verlag der Österreichischen Akademie der Wissenschaften, pp. 347–59.
- Nikolopoulos, V., 2003. "I Voreia Evvoia stin Periphereaia tou Mykinaïkou Kosmou kai o Rolos tis Aidipsou," in N. Kyparissi-Apostolika and M. Papaconstantinou, eds., *The Periphery of the Mycenaean World, 2nd International Interdisciplinary Colloquium.* Lamia: Ypourgeio Politismou, pp. 351–68.
- Nilsson, M., 2004. *A Civilization in the Making: A Contextual Study of Early Bronze Age Corridor Houses in the Aegean.* Unpublished Ph.D. dissertation, Göteborgs Universitet.
- Nixon, F. C., E. G. Reinhardt, and R. Rothaus., 2009. "Foraminifera and Tidal Notches: Dating Neotectonic Events at Korphos, Greece," *Marine Geology* 257: 41–53.
- Noller, J. S., L. E. Wells, E. Reinhardt, and R. M. Rothaus, 1997. "Subsidence of the Harbor at Kenchreai, Saronic Gulf, Greece, during the Earthquakes of A.D. 400 and A.D. 1928," *EOS* 78: 636.
- Nordquist, G. C., 1995. "The Pottery of the Early Helladic III and Middle Helladic Periods," in C. Runnels, D. Pullen, and S. Langdon, eds., *Artifact and Assemblage: The Finds from a Regional Survey of the Southern Argolid, Greece, Volume I. The Prehistoric and Early Iron Age Pottery and the Lithic Artifacts.* Stanford: Stanford University Press, pp. 43–51.
- Oatley, K. G., 1977. "Inference, Navigation, and Cognitive Maps," in P. N. Johnson-Laird and P. C. Wason, eds., *Thinking: Readings in Cognitive Science.* Cambridge: Cambridge University Press, pp. 537–47.
- Obeyesekere, G., 2005. *Cannibal Talk: The Man-Eating Myth and Human Sacrifice in the South Seas.* Berkeley: University of California Press.
- Oddo, P., M. Adani, N. Pinardi, C. Fratianni, M. Tonani, and D.

- Pettenuzzo, 2009. "A Nested Atlantic-Mediterranean Sea General Circulation Model for Operational Forecasting," *Ocean Science* 5: 461–73.
- Olson, D. B., V. H. Kourafalou, W. E. Johns, G. Samuels, and M. Veneziani, 2007. "Aegean Surface Circulation from a Satellite-Tracked Drifter Array," *Journal of Physical Oceanography* 37: 1898–1917.
- Onassoglou, A., 1985. *Die "Talmanischen" Siegel. Corpus der Minoischen und Mykenischen Siegel Beiheft 2*. Berlin: Gebrüder Mann Verlag.
- Osborne, R., 1996. *Greece in the Making: 1200–479 BC*. London: Routledge.
- Overbeck, J., 2007. "The Middle Bronze Age Sequences of Kea and Aegina," in F. Felten, W. Gauß, and R. Smetana, eds., *Middle Helladic Pottery and Synchronisms. Ägina-Kolonna Forschungen und Ergebnisse I*. Vienna: Verlag der Österreichischen Akademie der Wissenschaften, pp. 339–46.
- Overbeck, J. C., and D. M. Crego, 2008. "The Commercial Function and Development of Ayia Irini IV (Kea)," in N. Brodie, J. Doole, G. Gavalas, and C. Renfrew, eds., *Horizon: A Colloquium on the Prehistory of the Cyclades*. Cambridge: McDonald Institute for Archaeological Research, pp. 305–309.
- Palaima, T., 1991. "Maritime Matters in the Linear B Tablets," in R. Laffineur and L. Basch, eds., *Thalassa: L'Égée Préhistorique et la Mer, Aegaeum* 7. Liège: Université de Liège, pp. 273–310.
- Palaima, T., 1997. "Potter and Fuller: The Royal Craftsmen," in R. Laffineur and P. P. Betancourt, eds., *Techne: Craftsmen, Craftswomen and Craftsmanship in the Aegean Bronze Age, Aegaeum* 16. Liège: Université de Liège, pp. 407–12.
- Palaima, T., 2004. "Sacrificial Feasting in the Linear B Documents," in J. Wright, ed., *The Mycenaean Feast*. Princeton: American School of Classical Studies at Athens, pp. 97–126.
- Pantou, P., 2010. "Mycenaean Dimini in Context: Investigating Regional Variability and Socioeconomic Complexities in Late Bronze Age Greece," *AJA* 114: 381–401.
- Pantou, P., 2011. *Mycenaean Society Outside the Palaces: A Study of Late Helladic IIB–IIIB1 Corridor Buildings*. Unpublished Ph.D. dissertation, State University of New York, Buffalo.
- Papadimitriou, N., 2008. "Both Centre and Periphery? Thessaly in the

- Mycenaean Period,” in A. Tziaphalias, ed., *Periphereia Thessalias. Io Diethnes Synedrio Istorias kai Politismou tis Thessalias. Praktika Synedriou, 9–11 Noemvriou 2006*. Athens, pp. 98–113.
- Papageorgiou, D., 2008. “Sea Routes in the Prehistoric Cyclades,” in N. Brodie, J. Doole, G. Gavalas, and C. Renfrew, eds., *Horizon: An International Colloquium on the Prehistory of the Cyclades*. Cambridge: McDonald Institute for Archaeological Research, pp. 9–11.
- Papageorgiou, D., 2009. “The Marine Environment and Its Influence on Seafaring and Maritime Routes in the Prehistoric Aegean,” *European Journal of Archaeology* 11: 199–222.
- Papatheodorou, G., Th. Hasiotis, M. Geraga, E. Lyberis, and G. Ferentinos, 2001. “Marine Geophysical Techniques for Submarine Archaeological Purposes: Two Case Studies from Nicoleika Beach (Helice) and Pylos Bay,” in Y. Bassiakos, E. Aloupi, and Y. Facorellis, eds., *Archaeometry Issues in Greek Prehistory and Antiquity*. Athens: Hellenic Society of Archaeometry, pp. 139–55.
- Park, S., 2004. “Remote ENSO Influence on Mediterranean Sky Conditions during Late Summer and Autumn: Evidence for a Slowly Evolving Atmospheric Bridge,” *Quarterly Journal of the Royal Meteorological Society* 130: 2409–22.
- Parkinson, W. A., 1999. “Chipping Away at a Mycenaean Economy: Obsidian Exchange, Linear B, and Palatial Control in Late Bronze Age Messenia,” in M. L. Galaty and W. A. Parkinson, eds., *Rethinking Mycenaean Palaces: New Interpretations of an Old Idea*. Los Angeles: Cotsen Institute of Archaeology, pp. 73–85.
- Parkinson, W. A., 2010. “Beyond the Peer: Social Interaction and Political Evolution in the Bronze Age Aegean,” in D. J. Pullen, ed., *Political Economies of the Aegean Bronze Age*. Oxford: Oxbow Books, pp. 11–34.
- Parkinson, W. A., and M. L. Galaty, 2007. “Secondary States in Perspective: An Integrated Approach to State Formation in the Prehistoric Aegean,” *American Anthropologist* 109: 113–29.
- Parkinson, W. A., and M. L. Galaty, eds., 2009a. *Archaic State Interaction: The Eastern Mediterranean in the Bronze Age*. Santa Fe: School for Advanced Research Press.
- Parkinson, W. A., and M. L. Galaty, 2009b. “Introduction: Interaction and Ancient Societies,” in W. A. Parkinson and M. L. Galaty, eds., *Archaic State Interaction: The Eastern Mediterranean in the Bronze Age*.

- Santa Fe: School for Advanced Research Press, pp. 3–28.
- Patten, M., 1996. *Islands in Time: Sociogeography and Mediterranean History*. London: Routledge.
- Pelon, O., 1998. “Les Tombes Circulaires dans l’Égée de l’Âge du Bronze: État des Recherches sur les Tombes à Tholos,” *Topoi Orient-Occident* 8: 95–158.
- Perlès, C., 1990. *Les Industries Lithiques Taillées de Franchthi II: Les Industries du Mésolithique et du Néolithique Initial*. Bloomington: Indiana University Press.
- Perlès, C., 2003. “The Mesolithic at Franchthi: An Overview of the Data and Problems,” in N. Galanidou and C. Perlès, eds., *The Greek Mesolithic: Problems and Perspectives*. London: British School at Athens, pp. 79–87.
- Petrakis, V., 2004. “Ship Representations on Late Helladic IIIC Pictorial Pottery: Some Notes,” *Inferno* 9: 1–6.
- Petroutsas, E. I., and S. K. Manolis, 2010. “Reconstructing Late Bronze Age Diet in Mainland Greece Using Stable Isotope Analysis,” *Journal of Archaeological Science* 37: 614–20.
- Phelps, W., Y. Lolos, and Y. Vichos, eds., 1999. *The Point Iria Wreck: Interconnections in the Mediterranean ca. 1200 B.C., Proceedings of the International Conference, Island of Spetses, 19 September 1998*. Athens: Hellenic Institute of Marine Archaeology.
- Philippa-Touchais, A., 2007. “Aegina Matt Painted Pottery at Middle Helladic Aspis, Argos,” in F. Felten, W. Gauß, and R. Smetana, eds., *Middle Helladic Pottery and Synchronisms. Ägina-Kolonna Forschungen und Ergebnisse I*. Vienna: Verlag der Österreichischen Akademie der Wissenschaften, pp. 97–113.
- Phillips, J., 2008. *Aegyptica on the Island of Crete in their Chronological Context: A Critical Review*. 2 vols. Vienna: Verlag der Österreichischen Akademie der Wissenschaften.
- Pickard, C., and C. Bonsall, 2004. “Deep-Sea Fishing in the European Mesolithic: Fact or Fantasy?” *European Journal of Archaeology* 7: 273–90.
- Pickles, S., and E. Peletenburg, 1998. “Metallurgy, Society and the Bronze/Iron Transition in the East Mediterranean and the Near East,” *Reports of the Department of Antiquities, Cyprus*: 67–100.
- Pilafidis-Williams, K., 1998. *The Sanctuary of Aphaia on Aigina in the*

- Pirazzoli, P. A., S. C. Stiros, M. Arnold, J. Laborel, F. Laborel-Deguen, and S. Papageorgiou, 1994. "Episodic Uplift Deduced from Holocene Shorelines in the Perachora Peninsula, Corinth Area, Greece," *Tectonophysics* 229: 201–209.
- Polanyi, K., 1957. "The Economy as Instituted Process," in K. Polanyi, C. M. Arensberg, and H. W. Pearson, eds., *Trade and Market in the Early Empires: Economies in History and Theory*. Glencoe, IL: Free Press, pp. 243–70.
- Polanyi, K., 1963. "Ports of Trade in Early Societies," *Journal of Economic History* 23: 30–45.
- Porciani, L., 2009. "Mediterranean Identities in the Ancient World," in T. Rahimy, ed., *Representation, Expression and Identity: Interdisciplinary Insights on Multiculturalism, Conflict and Belonging*. Oxford: Oxford University Press, pp. 234–43.
- Powell, J., 1996. *Fishing in the Prehistoric Aegean*. SIMA-PB 137. Jonsered: Paul Åströms Förlag.
- Preston, L., 1999. "Mortuary Practices and the Negotiation of Social Identities at LM II Knossos," *Annual of the British School at Athens* 94: 131–43.
- Preston, L., 2004. "A Mortuary Perspective on Political Changes in Late Minoan II–IIIB Crete," *American Journal of Archaeology* 108: 321–48.
- Pryor, J. H., 1988. *Geography, Technology and War: Studies in the Maritime History of the Mediterranean, 649–1571*. Cambridge: Cambridge University Press.
- Pulak, C., 1997. "The Uluburun Shipwreck," in S. Swiny, R. L. Hohlfelder, and H. W. Swiny, eds., *Res Maritimae: Cyprus and the Eastern Mediterranean from Prehistory to Late Antiquity*. Atlanta: Scholars Press, pp. 233–62.
- Pulak, C., 1998. "The Uluburun Shipwreck: An Overview," *International Journal of Nautical Archaeology* 27: 188–224.
- Pulak, C., 2002. "The Uluburun Hull Remains," in H. Tzalas, ed., *Tropis VII. Seventh International Symposium on Ship Construction in Antiquity, Pylos, 26, 27, 28, 29 August 1999*. Athens: Hellenic Institute for the Preservation of Nautical Tradition, pp. 615–636.
- Pulak, C., 2005. "Discovering a Royal Ship from the Age of King Tut: Uluburun, Turkey," in G. F. Bass, ed., *Beneath the Seven Seas: Adventures with the Institute of Nautical Archaeology*. London: Thames

- Pulak, C., 2009. "Shipwrecks of Constantinople's Theodosian Harbor," paper presented at the 110th Annual Meeting of the Archaeological Institute of America, Philadelphia, January 8–11, 2009 (*110th Annual Meeting Abstracts*. Boston: AIA, p. 34).
- Pullen, D. J., 1986. "A 'House of Tiles' at Zygouries? The Function of Monumental Early Helladic Architecture," in R. Hägg and D. Konsola, eds., *Early Helladic Architecture and Urbanization, Proceedings of a Seminar held at the Swedish Institute in Athens, June 8, 1985*. Göteborg: Paul Åströms Förlag, pp. 79–84.
- Pullen, D. J., 2003. "By Land or by Sea: Chalcolithic and Early Bronze Age Settlements in Southern Greece and the Aegean Sea," in D. Gheorghiu, ed., *Chalcolithic and Early Bronze Age Hydrostrategies, Actes du XIVème Congrès UISPP, Université de Liège, 2–8 Septembre 2001. British Archaeological Reports 1123*. Oxford: Tempus Reparatum, pp. 25–29.
- Pullen, D. J., and T. F. Tartaron, 2007. "Where's the Palace? The Lack of State Formation in the Late Bronze Age Corinthia," in M. L. Galaty and W. A. Parkinson, eds., *Rethinking Mycenaean Palaces II: Revised and Expanded Edition*. Los Angeles: Cotsen Institute of Archaeology, pp. 146–58.
- Pye, K., 1983. "Coastal Dunes," *Progress in Physical Geography* 7: 531–57.
- Raaflaub, K., 2006. "Historical Approaches to Homer," in S. Deger-Jalkotzy and I. S. Lemos, eds., *Ancient Greece: From the Mycenaean Palaces to the Age of Homer*. Edinburgh: Edinburgh University Press, pp. 449–62.
- Raban, A., 1991. "Minoan and Canaanite Harbours," in R. Laffineur and L. Basch, eds., *Thalassa: L'Égée Préhistorique et la Mer, Aegaeum 7*. Liège: Université de Liège, pp. 129–46.
- Raban, A., 1995. "The Sea Peoples and Thera Ships," in H. Tzalas, ed., *Tropis III. Third International Symposium on Ship Construction in Antiquity, Athens 1989*. Athens: Hellenic Institute for the Preservation of Nautical Tradition, pp. 353–66.
- Raban, A., and N. Sterlitz, 2002. "Experimental Sailing with Boom-Footed Square Rig – Bronze Age Style," in H. Tzalas, ed., *Tropis VII. Seventh International Symposium on Ship Construction in Antiquity, Pylos, 26, 27, 28, 29 August 1999*. Athens: Hellenic Institute for the

- Preservation of Nautical Tradition, pp. 655–70.
- Rainbird, P., 2007. *The Archaeology of Islands*. Cambridge: Cambridge University Press.
- Rankov, B., ed., 2012. *Trireme Olympias: The Final Report*. Oxford: Oxbow Books.
- Rapp, G., and J. A. Gifford, eds., 1982. *Troy: The Archaeological Geology. Troy Supplementary Monograph 4*. Princeton: Princeton University Press.
- Rapp, G., and C. L. Hill, 1998. *Geoarchaeology: The Earth-Science Approach to Archaeological Interpretation*. New Haven: Yale University Press.
- Rapp, G., and J. C. Kraft, 1994. "Holocene Coastal Change in Greece and Aegean Turkey," in P. N. Kardulias, ed., *Beyond the Site: Regional Studies in the Aegean Area*. Lanham, MD: University Press of America, pp. 69–90.
- Reinhardt, E., and A. Raban, 1999. "Destruction of Herod the Great's Harbor at Caesarea Maritima, Israel – Geoarchaeological Evidence," *Geology* 27: 811–14.
- Renfrew, C., 1972. *The Emergence of Civilisation: The Cyclades and the Aegean in the Third Millennium B.C.* London: Methuen.
- Renfrew, C., 1975. "Trade as Action at a Distance: Questions of Integration and Communication," in J. A. Sabloff and C. C. Lamberg-Karlovsky, eds., *Ancient Civilization and Trade*. Albuquerque: University of New Mexico Press, pp. 3–59.
- Renfrew, C., 1993. "Trade Beyond the Material," in C. Scarre and F. Healy, eds., *Trade and Exchange in Prehistoric Europe. Proceedings of a Conference Held at the University of Bristol, April 1992*. Oxford: Oxbow Books, pp. 5–16.
- Renfrew, C., J. R. Cann, and J. E. Dixon, 1965. "Obsidian in the Aegean," *Annual of the British School of Archaeology at Athens* 60: 225–47.
- Robinson, A. R., W. G. Leslie, A. Theocharis, and A. Lascaratos, 2001. "Mediterranean Sea Circulation," *Encyclopedia of Ocean Sciences*. Academic Press, 1689–706.
- Robinson, A. R., P. Malanotte-Rizzoli, A. Hecht, A. Michelato, W. Roether, A. Theocharis, Ü. Ünlüata, N. Pinardi, A. Artegiani, A. Bergamasco, J. Bishop, S. Brenner, S. Christianidis, M. Gacic, D. Georgopoulos, M. Golnaraghi, M. Hausmann, H.-G. Junghaus, A.

- Lascaratos, M. A. Latif, W. G. Leslie, C. J. Lozano, T. Ouz, E. Özsoy, E. Papageorgiou, E. Paschini, Z. Rozentroub, E. Sansone, P. Scarazzato, R. Schlitzer, G.-C. Spezie, E. Tziperman, G. Zodiatis, L. Athanassiadou, M. Gerges, and M. Osman, 1992. "General Circulation of the Eastern Mediterranean," *Earth Science Reviews* 32: 285–309.
- Rodwell, M. J., and B. J. Hoskins, 1996. "Monsoons and the Dynamics of Deserts," *Quarterly Journal of the Royal Meteorological Society* 12: 1385–404.
- Rönby, J., 2007. "Maritime Durées: Long-Term Structures in a Coastal Landscape," *Journal of Maritime Archaeology* 2: 65–82.
- Rose, M., 1995. "Fishing at Franchthi Cave, Greece: Changing Environments and Patterns of Exploitation," *Old World Archaeology Newsletter* 18(3): 21–26.
- Rothaus, R. M., E. Reinhardt, T. Tartaron, and J. Noller, 2003. "A Geoarchaeological Approach for Understanding Prehistoric Usage of the Coastline of the Eastern Korinthia," in K. P. Foster and R. Laffineur, eds., *Metron: Measuring the Aegean Bronze Age*, *Aegaeum* 24. Liège: Université de Liège, pp. 37–47.
- Roussenov, V., E. Stanev, V. Artale, and N. Pinardi, 1995. "A Seasonal Model of the Mediterranean Sea General Circulation," *Journal of Geophysical Research* 100: 13,515–538.
- Runnels, C. N., 1985a. "Trade and the Demand for Millstones in Southern Greece in the Neolithic and the Early Bronze Age," in A. B. Knapp and T. Stech, eds., *Prehistoric Production and Exchange: The Aegean and Eastern Mediterranean*. Los Angeles: UCLA Institute of Archaeology, pp. 30–43.
- Runnels, C. N., 1985b. "The Bronze Age Flaked Stone Industries from Lerna: A Preliminary Report," *Hesperia* 54: 357–91.
- Runnels, C., 1995. "Environmental Degradation in Ancient Greece," *Scientific American* 272(3): 72–75.
- Runnels, C., 2000. "Anthropogenic Soil Erosion in Prehistoric Greece: The Contribution of Regional Surveys to the Archaeology of Environmental Disruptions and Human Response," in G. Bawden and R. M. Reycraft, eds., *Environmental Disaster and the Archaeology of Human Response*, *Anthropological Papers* 7. Albuquerque: Maxwell Museum of Anthropology, University of New Mexico, pp. 11–20.
- Runnels, C., 2001. "Review of Aegean Prehistory IV: The Stone Age of

- Greece from the Palaeolithic to the Advent of the Neolithic,” in T. Cullen, ed., *Aegean Prehistory: A Review*. Boston: Archaeological Institute of America, pp. 225–58.
- Runyan, T. J., 1999. “Review of the Development of the Rudder: A Technological Tale by L. Mott,” *Speculum* 74: 1096–98.
- Rutter, J. B., 1989. “A Ceramic Definition of Late Helladic I from Tsoungiza,” *Hydra* 6: 1–19.
- Rutter, J. B., 1990. “Pottery Groups from Tsoungiza of the End of the Middle Bronze Age,” *Hesperia* 59: 375–458.
- Rutter, J. B., 1993. “A Group of LH IIA Pottery from Tsoungiza,” *Hesperia* 62: 53–93.
- Rutter, J. B., 1999. “Cretan External Relations during Late Minoan IIIA2–B (ca. 1370–1200 BC): A View from the Mesara,” in W. Phelps, Y. Lolos, and Y. Vichos, eds., *The Point Iria Wreck: Interconnections in the Mediterranean ca. 1200 B.C. Proceedings of the International Conference, Island of Spetses, 19 September 1998*. Athens: Hellenic Institute of Marine Archaeology, pp. 139–86.
- Rutter, J. B., 2001. “The Prepalatial Bronze Age of the Southern and Central Greek Mainland,” in T. Cullen, ed., *Aegean Prehistory: A Review*. Boston: Archaeological Institute of America, pp. 95–155.
- Rutter, J. B., 2007. “Reconceptualizing the Middle Helladic ‘Type Site’ from a Ceramic Perspective: Is ‘Bigger’ Really Better?,” in F. Felten, W. Gauß, and R. Smetana, eds., *Middle Helladic Pottery and Synchronisms. Ägina-Kolonna Forschungen und Ergebnisse I*. Vienna: Verlag der Österreichischen Akademie der Wissenschaften, pp. 35–44.
- Sahlins, M. D., 1965. “On the Sociology of Primitive Exchange,” in M. Gluckman and F. Eggan, eds., *The Relevance of Models for Social Anthropology*. London: Tavistock, pp. 139–236.
- aholu, V., 2005. “Interregional Contacts around the Aegean during the Early Bronze Age: New Evidence from the zmir Region,” *Anadolu/Anatolia* 27: 97–120.
- Sarri, K., 2007. “Aeginetan Matt-Painted Pottery in Boeotia,” in F. Felten, W. Gauß, and R. Smetana, eds., *Middle Helladic Pottery and Synchronisms. Ägina-Kolonna Forschungen und Ergebnisse I*. Vienna: Verlag der Österreichischen Akademie der Wissenschaften, pp. 151–65.

- Sarris, A., and R. Jones, 2000. "Geophysical and Related Techniques Applied to Archaeological Survey in the Mediterranean: A Review," *Journal of Mediterranean Archaeology* 13: 3–75.
- Sayin, E., C. Eronat, . Uçkaç, and . T. Beiktepe, 2011. "Hydrography of the Eastern Part of the Aegean Sea during the Eastern Mediterranean Transient (EMT)," *Journal of Marine Systems* 88: 502–15.
- Saxe, A. A., 1970. *Social Dimensions of Mortuary Practices*. Unpublished Ph.D. dissertation, University of Michigan.
- Schallin, A.-L., 1996. "The Berbati-Limnes Archaeological Survey: The Late Helladic Period," in B. Wells with C. Runnels, eds., *The Berbati-Limnes Archaeological Survey 1988–1990*. Stockholm: Paul Åströms Förlag, pp. 123–75.
- Schofield, L., 2007. *The Mycenaeans*. Los Angeles: Getty Publications.
- Schofield, L., and R. B. Parkinson, 1994. "Of Helmets and Heretics: A Possible Egyptian Representation of Mycenaean Warriors on a Papyrus from el-Amarna," *Annual of the British School at Athens* 89: 157–70.
- Scott, J., 1991. *Social Network Analysis: A Handbook*. London: Sage Publications.
- Severin, T., 1985. *The Jason Voyage: The Quest for the Golden Fleece*. New York: Simon and Schuster.
- Severin, T., 1987. *The Ulysses Voyage: Sea Search for the Odyssey*. New York: E.P. Dutton.
- Sgouritsa, N., 2010. "Lazarides on Aegina: Another Prehistoric Site," in A. Philippa-Touchais, G. Touchais, S. Voutsaki, and J. Wright, eds., *Mesohelladika: Le Grèce Continentale au Bronze Moyen. Bulletin de Correspondance Hellénique Supplément* 52, pp. 175–80.
- Shaw, J. W., 1987. "The Early Helladic II Corridor House: Development and Form," *American Journal of Archaeology* 91: 59–79.
- Shaw, J. W., 1990. "Bronze Age Aegean Harboursides," in D. A. Hardy, C. G. Doumas, J. A. Sakellarakis, and P. M. Warren, eds., *Thera and the Aegean World III. Vol. 1: Archaeology. Proceedings of the Third International Congress, Santorini, Greece, 3–9 September 1989*. London: The Thera Foundation, pp. 420–36.
- Shaw, J. W., 2004. "Kommos: The Sea-Gate to Southern Crete," in L. P. Day, M. S. Mook, and J. D. Muhly, eds., *Crete Beyond the Palaces: Proceedings of the Crete 2000 Conference. Prehistory Monographs* 10. Philadelphia: INSTAP Academic Press, pp. 43–51.

Shaw, J. W., 2006. *Kommos: A Minoan Harbor Town and Greek Sanctuary in Southern Crete*. Princeton: American School of Classical Studies at Athens.

Shaw, J. W., 2007. "Sequencing the EH II 'Corridor Houses'," *Annual of the British School at Athens* 102: 137–51.

Shaw, J. W., and M. C. Shaw, 1990. *Kommos: An Excavation on the South Central Coast of Crete V. The Monumental Minoan Buildings at Kommos*. Princeton: Princeton University Press.

Shaw, J. W., and M. C. Shaw, 1997. "'Mycenaean' Kommos," in J. Driessen and A. Farnoux, eds., *La Crète Mycénienne. Actes de la Table Ronde Internationale Organisée par L'École Française d'Athènes, Athènes, 25–28 Mars 1991*. BCH Supplément 30. Paris: Bulletin de Correspondance Hellénique, pp. 423–34.

Shaw, J. W., and M. C. Shaw, 1999. "A Proposal for Bronze Age Aegean Ship-Sheds in Crete," in H. Tzalas, ed., *Tropis V. Fifth International Symposium on Ship Construction in Antiquity, Nauplia, 26, 27, 28 August 1993*. Athens: Hellenic Institute for the Preservation of Nautical Tradition, pp. 369–82.

Shaw, M., 1980. "Painted 'Ikria' at Mycenae?," *American Journal of Archaeology* 84: 167–79.

Shaw, M., 1982. "Ship Cabins of the Bronze Age Aegean," *International Journal of Nautical Archaeology and Underwater Exploration* 11: 53–58.

Shaw, M., 1985. "Late Minoan Buildings J/T, and Late Minoan Buildings N and P at Kommos: Their Nature and Possible Uses as Residences, Palaces, or Emporia," in J. Shaw and M. Shaw, eds., *A Great Minoan Triangle in Southcentral Crete: Kommos, Hagia Triada, Phaistos*. Scripta Mediterranea 6. Toronto: University of Toronto Press, pp. 19–25.

Shaw, M., 2001. "Symbols of Naval Power at the Palace at Pylos: The Evidence from the Frescoes," in S. Böhm and K.-V. von Eickstedt, eds., *Ithaki: Festschrift für Jörg Schäfer zum 75. Geburtstag am 25. April 2001*. Würzburg: Ergon Verlag, pp. 37–43.

Shelmerdine, C. W., 2001. "Review of Aegean Prehistory VI: The Palatial Bronze Age of the Southern and Central Greek Mainland," in T. Cullen, ed., *Aegean Prehistory: A Review*. Boston: Archaeological Institute of America, pp. 329–81.

Shelmerdine, C. W., and J. Bennet, 2008. "Mycenaean States: Economy and Administration," in C. W. Shelmerdine, ed., *The Cambridge*

- Companion to the Aegean Bronze Age*. Cambridge: Cambridge University Press, pp. 289–309.
- Shelton, K., 2010. “Citadel and Settlement: A Developing Economy at Mycenae, the Case of Petsas House,” in D. J. Pullen, ed., *Political Economies of the Aegean Bronze Age*. Oxford: Oxbow Books, pp. 184–204.
- Sherratt, A., and S. Sherratt, 1991. “From Luxuries to Commodities: The Nature of Mediterranean Bronze Age Trading Systems,” in N. H. Gale, ed., *Bronze Age Trade in the Mediterranean, SIMA 90*. Jonsered: Paul Åströms Förlag, pp. 351–86.
- Sherratt, A., and S. Sherratt, 1998. “Small Worlds: Interaction and Identity in the Ancient Mediterranean,” in E. Cline and D. Harris-Cline, eds., *The Aegean and the Orient in the Second Millennium, Aegaeum 18*. Liège: Université de Liège, pp. 329–42.
- Sherratt, S., 2001. “Potemkin Palaces and Route-Based Economies,” in S. Voutsaki and J. Killen, eds., *Economy and Politics in the Mycenaean Palace States: Proceedings of a Conference held on 1–3 July 1999 in the Faculty of Classics*. Cambridge: Cambridge Philological Society, pp. 214–38.
- Sherratt, S., 2009. “The Aegean and the Wider World: Some Thoughts on a World-Systems Perspective,” in W. A. Parkinson and M. L. Galaty, eds., *Archaic State Interaction: The Eastern Mediterranean in the Bronze Age*. Santa Fe: School for Advanced Research Press, pp. 81–106.
- Siedentopf, H. B., 1991. *Matbemalete Keramik der Mittleren Bronzezeit. Alt-Ägina IV, 2*. Mainz: Philipp von Zabern.
- Siennicka, M., 2002. “Mycenaean Settlement Patterns in the Saronic Gulf,” *wiatowit* 4(45): 179–93.
- Singer, I., 2006. “Ships Bound for Lukka: A New Interpretation of the Companion Letters RS 94.2530 and RS 94.2523,” *Altorientalische Forschungen* 33: 242–62.
- Sjöberg, B. L., 2004. *Asine and the Argolid in the Late Helladic III Period. A Socio-economic Study*. *British Archaeological Reports International Series 1225*. Oxford: Archaeopress.
- Snodgrass, A. M., 1991. “Bronze Age Exchange: A Minimalist Position,” in N. H. Gale, ed., *Bronze Age Trade in the Mediterranean, SIMA 90*. Jonsered: Paul Åströms Förlag.
- Soukissian, T. H., A. M. Prospathopoulos, and C. Diamanti, 2002.

- “Wind and Wave Data Analysis for the Aegean Sea – Preliminary Results,” *The Global Atmosphere and Ocean System* 8: 163–89.
- Spanou, S., G. Verroios, G. Dimitrellos, A. Tiniakou, and T. Georgiadis, 2006. “Notes of Flora and Vegetation of the Sand Dunes of Western Greece,” *Willdenowia* 36: 235–46.
- Spathari, E., 1995. *Sailing through Time: The Ship in Greek Art*. Athens: Kapon Editions.
- Stanford, W. B., 1947. *The Odyssey of Homer*. London: MacMillan.
- Stocker, S., and J. L. Davis, 2004. “Animal Sacrifice, Archives, and Feasting at the Palace of Nestor,” in J. Wright, ed., *The Mycenaean Feast*. Princeton: American School of Classical Studies at Athens, pp. 59–75.
- Stocker, S., and J. L. Davis, 2011. “Land and Sea: The Stratigraphic Context for the Wall Paintings from Hall 64 at the ‘Palace of Nestor’ at Pylos,” paper presented at the conference “Mycenaean Wall Paintings in Context: New Discoveries and Old Finds Reconsidered,” 11–13 February 2011, American School of Classical Studies at Athens.
- Strasser, T. F., 2010. “Location and Perspective in the Theran Flotilla Fresco,” *Journal of Mediterranean Archaeology* 23: 3–26.
- Strasser, T. F., E. Panagopoulou, C. N. Runnels, P. M. Murray, N. Thompson, P. Karkanas, F. W. McCoy, and K. W. Wegman, 2010. “Stone Age Seafaring in the Mediterranean: Evidence from the Plakias Region for Lower Palaeolithic and Mesolithic Habitation of Crete,” *Hesperia* 79: 145–190.
- Streif, H.-J., 1964. *Beiträge zur Geologie der Bucht von Elis (Peloponnes/Griechenland)*. Unpublished M.S. thesis, University of Freiburg.
- Summerfield, M. A., 1991. *Global Geomorphology: An Introduction to the Study of Landforms*. New York: John Wiley & Sons.
- Sýkora, K. V., D. Babalonas, and E. S. Papastergiadou, 2003. “Strandline and Sand-Dune Vegetation of Coasts of Greece and of Some Other Aegean Countries,” *Phytocoenologia* 33: 409–46.
- Tandy, D. W., 1997. *Warriors into Traders: The Power of the Market in Early Greece*. Berkeley: University of California Press.
- Tanner, W. F., 1995. “Origin of Beach Ridges and Swales,” *Marine Geology* 129: 149–161.

- Tartaron, T. F., 2001a. "Glykys Limin: A Mycenaean Port of Trade in Southern Epirus?," in D. W. Tandy, ed., *Prehistory and History: Ethnicity, Class, and Political Economy*. Montréal: Black Rose Books, pp. 1–40.
- Tartaron, T. F., 2001b. "Review of C. Broodbank, *An Island Archaeology of the Early Cyclades*," *Journal of Field Archaeology* 28: 225–29.
- Tartaron, T. F., 2004. *Bronze Age Landscape and Society in Southern Epirus, Greece*. BAR International Series 1290. Oxford: Archaeopress.
- Tartaron, T. F., 2005. "Glykys Limin and the Discontinuous Mycenaean Periphery," in R. Laffineur and E. Greco, eds., *Emporia: Aegeans in the Central and Eastern Mediterranean*, *Aegaeum* 25. Liège: Université de Liège, pp. 153–60.
- Tartaron, T. F., 2008. "Aegean Prehistory as World Archaeology: Recent Trends in the Archaeology of Bronze Age Greece," *Journal of Archaeological Research* 16: 83–161.
- Tartaron, T. F., 2010. "Between and Beyond: Political Economy in Non-palatial Mycenaean Worlds," in D. J. Pullen, ed., *Political Economies of the Aegean Bronze Age*. Oxford: Oxbow Books, pp. 161–83.
- Tartaron, T. F., T. E. Gregory, D. J. Pullen, J. S. Noller, R. M. Rothaus, J. L. Rife, L. Diacopoulos, R. Schon, W. Caraher, D. K. Pettegrew, and D. Nakassis, 2006. "The Eastern Korinthia Archaeological Survey: Integrated Methods for a Dynamic Landscape," *Hesperia* 75: 453–523.
- Tartaron, T. F., D. J. Pullen, R. K. Dunn, L. Tzortzopoulou-Gregory, and A. Dill, 2011. "The Saronic Harbors Archaeological Research Project: Investigations at Mycenaean Kalamianos, 2007–2009," *Hesperia* 80: 559–634.
- Tartaron, T. F., D. J. Pullen, and J. S. Noller, 2006. "Rillenkarren at Vayia: Geomorphology and a New Class of Early Bronze Age Fortified Settlement in Southern Greece," *Antiquity* 80: 145–60.
- Tartaron, T. F., R. M. Rothaus, and D. J. Pullen, 2003. "Searching for Prehistoric Aegean Harbors with GIS, Geomorphology, and Archaeology," *Athena Review* 3(4): 27–36.
- Thomas. P. M., 1992. *LH IIIB1 Pottery from Tsoungiza and Zygouries*. Unpublished Ph.D. dissertation, University of North Carolina, Chapel Hill.

- Thomas, P. M., 2005. "A Deposit of Late Helladic IIIB1 Pottery from Tsoungiza," *Hesperia* 74: 451–573.
- Thomas, S. D., 1987. *The Last Navigator*. New York: Henry Holt and Company.
- Thomatos, M., 2006. *The Final Revival of the Aegean Bronze Age: A Case Study of the Argolid, Corinthia, Attica, Euboea, the Cyclades and the Dodecanese during LH IIIC Middle*. Oxford: Archaeopress.
- Tilley, A., 1999. "Sailing to Windward in the Ancient Mediterranean," in H. Tzalas, ed., *Tropis V. Fifth International Symposium on Ship Construction in Antiquity, Nauplia, 26, 27, 28 August 1993*. Athens: Hellenic Institute for the Preservation of Nautical Tradition, pp. 421–28.
- Tilley, C. Y., 1994. *A Phenomenology of Landscape: Places, Paths and Monuments*. Oxford: Berg.
- Torrence, R., 1984. "Monopoly or Direct Access? Industrial Organization at the Melos Obsidian Quarries," in J. Ericson and B. Purdy, eds., *Prehistoric Quarries and Lithic Production*. Cambridge: Cambridge University Press, pp. 49–64.
- Touchais, G., 2007. "Coarse Ware from the Middle Helladic Settlement of Aspis, Argos: Local Production and Imports," in F. Felten, W. Gauß, and R. Smetana, eds., *Middle Helladic Pottery and Synchronisms. Ägina-Kolonna Forschungen und Ergebnisse I*. Vienna: Verlag der Österreichischen Akademie der Wissenschaften, pp. 81–96.
- Triantaphyllou, S., M. P. Richards, C. Zerner, and S. Voutsaki, 2008. "Isotopic Dietary Reconstruction of Humans from Middle Bronze Age Lerna," *Journal of Archaeological Science* 35: 3028–3034.
- Tzalas, H., ed. 1989. *Tropis I. First International Symposium on Ship Construction in Antiquity, Piraeus, 30 August–1 September 1985*. Athens: Hellenic Institute for the Preservation of Nautical Tradition.
- Tzalas, H., ed., 1990. *Tropis II. Second International Symposium on Ship Construction in Antiquity, Delphi, 27–29 August 1987*. Athens: Hellenic Institute for the Preservation of Nautical Tradition.
- Tzalas, H., ed. 1995a. *Tropis III. Third International Symposium on Ship Construction in Antiquity, Athens 1989*. Athens: Hellenic Institute for the Preservation of Nautical Tradition.
- Tzalas, H., 1995b. "On the Obsidian Trail with a Papyrus Craft in the Cyclades," in H. Tzalas, ed., *Tropis III. Third International Symposium on Ship Construction in Antiquity, Athens 1989*. Athens: Hellenic

- Tzalas, H., ed. 1999. *Tropis V. Fifth International Symposium on Ship Construction in Antiquity, Nauplia, 26, 27, 28 August 1993*. Athens: Hellenic Institute for the Preservation of Nautical Tradition.
- Tzalas, H., ed. 2001. *Tropis VI. Sixth International Symposium on Ship Construction in Antiquity, Lamia, 28, 29, 30 August 1996*. Athens: Hellenic Institute for the Preservation of Nautical Tradition.
- Tzalas, H., ed. 2002. *Tropis VII. Seventh International Symposium on Ship Construction in Antiquity, Pylos, 26, 27, 28, 29 August 1999*. Athens: Hellenic Institute for the Preservation of Nautical Tradition.
- USNHO (= U.S. Navy Hydrographic Office), 1951. *Sailing Directions for the Mediterranean, Volume IV: Libya, Egypt, Turkey (Southern Coast), Syria, Lebanon, Israel, and the Islands of Crete, Scarpanto, Rhodes and Cyprus*, 2nd ed. Washington, DC: United States Government Printing Office.
- USNHO (= U.S. Navy Hydrographic Office), 1952. *Sailing Directions for the Mediterranean, Volume V: The Aegean Sea (H.O. Pub. No. 56)*, 2nd ed. Washington, DC: United States Government Printing Office.
- USNOO (= U.S. Naval Oceanographic Office), 1971a. *Sailing Directions (Enroute) for the Eastern Mediterranean (H.O. Pub. No. 132)*. Washington, DC: United States Government Printing Office.
- USNOO (= U.S. Naval Oceanographic Office), 1971b. *Sailing Directions (Planning Guide) for the Mediterranean (H.O. Pub. No. 130)*. Washington, DC: United States Government Printing Office.
- van Andel, T. H., 1989. "Late Quaternary Sea-Level and Archaeology," *Antiquity* 63: 733–45.
- van Andel, T. H., 1994. "Geo-archaeology and Archaeological Science: A Personal View," in P. N. Kardulias, ed., *Beyond the Site: Regional Studies in the Aegean Area*. Lanham, MD: University Press of America, pp. 25–44.
- van Andel, T. H., and C. Runnels, 1987. *Beyond the Acropolis: A Rural Greek Past*. Stanford: Stanford University Press.
- van Andel, T. H., C. N. Runnels, and K. O. Pope, 1986. "Five Thousand Years of Land Use and Abuse in the Southern Argolid, Greece," *Hesperia* 55: 103–28.
- van Andel, T. H., and S. B. Sutton, 1988. *Landscape and People of the Franchthi Region*. Bloomington: Indiana University Press.

- van Andel, T. H., E. Zangger, and A. Demitrack, 1990. "Land Use and Soil Erosion in Prehistoric and Historical Greece," *Journal of Field Archaeology* 17: 379–96.
- Van de Moortel, A., and E. Zahou, 2005. "2004 Excavations at Mitrou, East Lokris," *Aegean Archaeology* 7: 39–48.
- Van de Moortel, A., and E. Zahou, 2009. "Five Years of Archaeological Excavation at the Bronze Age and Early Iron Age Site of Mitrou, East Lokris (2004–2008). Preliminary Results," paper presented at the Archaeological Meeting of Thessaly and Central Greece, Volos, 12–15 March, 2009.
- Van de Noort, R., and A. O'Sullivan, 2006. *Rethinking Wetland Archaeology*. London: Duckworth.
- Van Effenterre, H., 1980. *Le Palais de Mallia et la Cité Minoenne. Incunabula Graeca* 76. Rome: Edizioni dell'Ateneo.
- van Wijngaarden, G.-J., 2002. *Use and Appreciation of Mycenaean Pottery in the Levant, Cyprus and Italy (ca. 1600–1200 BC)*. Amsterdam Archaeological Studies 8. Amsterdam: Amsterdam University Press.
- Veenhof, K. R., 1997. "'Modern' Features in Old Assyrian Trade," *Journal of the Economic and Social History of the Orient* 40: 336–66.
- Ventris, M., and J. Chadwick, 1973. *Documents in Mycenaean Greek*. Cambridge: Cambridge University Press.
- Vichos, Y., 1999. "The Point Iria Wreck: The Nautical Dimension," in W. Phelps, Y. Lolos, and Y. Vichos, eds., *The Point Iria Wreck: Interconnections in the Mediterranean ca. 1200 B.C. Proceedings of the International Conference, Island of Spetses, 19 September 1998*. Athens: Hellenic Institute of Marine Archaeology, pp. 77–98.
- Vichos, Y., and Y. Lolos, 1997. "The Cypro-Mycenaean Wreck at Point Iria in the Argolic Gulf: First Thoughts on the Origin and Nature of the Vessel," in S. Swiny, R. L. Hohlfelder, and H. W. Swiny, eds., *Res Maritimae: Cyprus and the Eastern Mediterranean from Prehistory to Late Antiquity*. Atlanta: Scholars Press, pp. 321–37.
- Vika, E., V. Aravantinos, and M. P. Richards, 2009. "Aristophanes and Stable Isotopes: A Taste for Freshwater Fish in Classical Thebes (Greece)?" *Antiquity* 83: 1076–83.
- Vousdoukas, M. I., A. F. Velegarakis, and T. A. Plomaritis. 2007. "Beachrock Occurrence, Characteristics, Formation Mechanisms and Impacts," *Earth-Science Reviews* 85: 23–46.

- Voutsaki, S., 1995. "Social and Political Processes in the Mycenaean Argolid: The Evidence from the Mortuary Practices," in R. Laffineur and W.-D. Niemeier, eds., *Politeia: Society and State in the Aegean Bronze Age*, *Aegaeum* 12. Liège: Université de Liège, pp. 55–65.
- Voutsaki, S., 1998. "Mortuary Evidence, Symbolic Meanings and Social Change: A Comparison between Messenia and the Argolid in the Mycenaean Period," in K. Branigan, ed., *Cemetery and Society in the Aegean Bronze Age*. Sheffield: University of Sheffield, pp. 41–58.
- Voutsaki, S., 1999. "The Shaft Grave Offerings and Symbols of Power and Prestige," in I. Kilian, ed., *Bronze Age Elites: Symbols of Power and Prestige in the Bronze Age Aegean*. Mainz: Römisch-Germanisches Zentralmuseums, pp. 103–17.
- Voutsaki, S., 2001. "Centralised Palatial Control: The Archaeological Evidence," in S. Voutsaki and J. Killen, eds., *Economy and Politics in the Mycenaean Palace States: Proceedings of a Conference held on 1–3 July 1999 in the Faculty of Classics*. Cambridge: Cambridge Philological Society, pp. 195–213.
- Voutsaki, S., 2010. "From the Kinship Economy to the Palatial Economy: The Argolid in the Second Millennium BC," in D. J. Pullen, ed., *Political Economies of the Aegean Bronze Age*. Oxford: Oxbow Books, pp. 86–111.
- Wachsmann, S., 1997. "Were the Sea Peoples Mycenaean? The Evidence of Ship Iconography," in S. Swiny, R. L. Hohlfelder, and H. W. Swiny, eds., *Res Maritimae: Cyprus and the Eastern Mediterranean from Prehistory to Late Antiquity*. Atlanta: Scholars Press, pp. 339–56.
- Wachsmann, S., 1998. *Seagoing Ships and Seamanship in the Bronze Age Levant*. College Station: Texas A & M University Press.
- Wachsmann, S., 1999. "The Pylos Rowers Tablets Reconsidered," in H. Tzalas, ed., *Tropis V. Fifth International Symposium on Ship Construction in Antiquity, Nauplia, 26, 27, 28 August 1993*. Athens: Hellenic Institute for the Preservation of Nautical Tradition, pp. 491–504.
- Wagstaff, J. M., 1965. "The Economy of the Mani Peninsula (Greece) in the 18th Century," *Balkan Studies* 6: 293–304.
- Warburton, D. A., ed., 2009. *Time's Up! Dating the Minoan Eruption of Santorini: Acts of the Minoan Eruption Chronology Workshop, Sandbjerg, November 2007. Monographs of the Danish Institute at Athens* 10. Athens: Danish Institute at Athens.

- Ward, C. A., 2010. "Seafaring in the Bronze Age Aegean: Evidence and Speculation," in D. J. Pullen, ed., *Political Economies of the Aegean Bronze Age*. Oxford: Oxbow Books, pp. 149–60.
- Wardle, K., 1980. "Excavations at Assiros, 1975–79," *Annual of the British School at Athens* 75: 229–65.
- Warren, P., 1979. "The Miniature Fresco from the West House at Akrotiri, Thera, and Its Aegean Setting," *Journal of Hellenic Studies* 99: 115–29.
- Watrous, L. V., 2010. "The Harbor of Gournia: Fieldwork in 2008–2009," *Kentro* 13 (Fall 2010): 12–14.
- Watts, D. J., 1999. *Small Worlds. The Dynamics of Network between Order and Randomness*. Princeton: Princeton University Press.
- Watts, D. J., and S. Strogatz, 1998. "Collective Dynamics of 'Small World' Networks," *Nature* 393: 440–42.
- Webster, 1913. *Webster's Revised Unabridged Dictionary*, ed. N. Porter. New York: G. & C. Merriman Company.
- Wedde, M., 2000. *Towards a Hermeneutics of Aegean Bronze Age Ship Imagery*. Mannheim and Möhnesee: Bibliopolis.
- Wedde, M., 2001. "On the Role of Multi-functional Hybrid Hulls in the Construction of a Narrative of Early Greek Ship Architecture," in H. Tzalas, ed., *Tropis VI. Sixth International Symposium on Ship Construction in Antiquity, Lamia, 28, 29, 30 August 1996*. Athens: Hellenic Institute for the Preservation of Nautical Tradition, pp. 607–33.
- Wedde, M., 2002. "Birdshead Revisited: The Bow Morphology of the Early Greek Galley," in H. Tzalas, ed., *Tropis VII. Seventh International Symposium on Ship Construction in Antiquity, Pylos, 26, 27, 28, 29 August 1999*. Athens: Hellenic Institute for the Preservation of Nautical Tradition, pp. 837–56.
- Wedde, M., 2005. "The Mycenaean Galley in Context: From Fact to *Idée Fixe*," in R. Laffineur and E. Greco, eds., *Emporia: Aegeans in the Central and Eastern Mediterranean, Aegaeum* 25. Liège: Université de Liège, pp. 29–37.
- Wedde, M., 2006. "Pictorial Evidence for Partial System Survival in the Greek Bronze Age to Iron Age Transition," in E. Rystedt and B. Wells, eds., *Pictorial Pursuits: Figurative Painting on Mycenaean and Geometric Pottery. Papers from Two Seminars at the Swedish Insititute at Athens in*

- 1999 and 2001. Stockholm: Svenska Institutet i Athen, pp. 255–69.
- Weingarten, J., 1997. “Another Look at Lerna: An EH IIB Trading Post?,” *Oxford Journal of Archaeology* 16: 147–66.
- Wells, L., 2001. “Archaeological Sediments in Coastal Environments,” in J. K. Stein and W. R. Farrand, eds., *Sediments in Archaeological Context*. Salt Lake City: University of Utah Press, pp. 149–82.
- Westerdahl, C., 1992. “The Maritime Cultural Landscape,” *International Journal of Nautical Archaeology* 21: 5–14.
- Whitelaw, T., 2000. “Settlement Instability and Landscape Degradation in the Southern Aegean in the Third Millennium B.C.,” in P. Halstead and C. Frederick, eds., *Landscape and Land Use in Postglacial Greece*. Sheffield: Sheffield Academic Press, pp. 135–61.
- Whitelaw, T., 2001a. “Reading Between the Tablets: Assessing Mycenaean Palatial Involvement in Ceramic Production and Consumption,” in S. Voutsaki and J. Killen, eds., *Economy and Politics in the Mycenaean Palace States. Proceedings of a Conference Held on 1–3 July 1999 in the Faculty of Classics*. Cambridge: Cambridge Philological Society, pp. 51–79.
- Whitelaw, T. 2001b. “From Sites to Communities: Defining the Human Dimensions of Minoan Urbanism,” in K. Branigan, ed., *Urbanism in the Aegean Bronze Age*. Sheffield: Sheffield Academic Press, pp. 15–37.
- Whitley, J., 1991. *Style and Society in Dark Age Greece: The Changing Face of a Pre-Literate Society 1100–700 BC*. Cambridge: Cambridge University Press.
- Wiencke, M. H., 1989. “Change in Early Helladic II,” *American Journal of Archaeology* 93: 495–509.
- Wiencke, M. H., 2000. *Lerna IV: The Architecture, Stratification, and Pottery of Lerna III*. Princeton: American School of Classical Studies at Athens.
- Wiener, M. H., 1987. “Trade and Rule in Minoan Crete,” in R. Hägg and N. Marinatos, eds., *Function of the Minoan Palaces: Proceedings of the 4th International Symposium at the Swedish Institute in Athens, 10–16 June, 1984*. Stockholm: Svenska Institutet i Athen, pp. 261–67.
- Wild, E. M., W. Gauß, G. Forstenpointner, M. Lindblom, R. Smetana, P. Steier, U. Thanheiser, and F. Weninger, 2010. “14C Dating of the Early to Late Bronze Age Stratigraphic Sequence of Aegina Kolonna,

- Greece,” *Nuclear Instruments and Methods in Physics Research* 268: 1013–1021.
- Williams, D., 2009. “The Story of the Aigina Treasure,” in J. L. Fitton, ed., *The Aigina Treasure: Aegean Bronze Age Jewellery and a Mystery Revisited*. London: British Museum Press, pp. 11–16.
- Wolpert, A., 2004. “Getting Past Consumption and Competition: Legitimacy and Consensus in the Shaft Graves,” in J. Barrett and P. Halstead, eds., *The Emergence of Civilisation Revisited*. Oxford: Oxbow Books, pp. 127–44.
- Wright, J. C., 2004. “Comparative Settlement Patterns during the Bronze Age in the Northeastern Peloponnesos,” in S. Alcock and J. Cherry, eds., *Side-by-Side Survey: Comparative Regional Studies in the Mediterranean World*. Oxford: Oxbow Books, pp. 114–31.
- Wright, J. C., 2010. “Towards a Social Archaeology of Middle Helladic Greece,” in A. Philippa-Touchais, G. Touchais, S. Voutsaki, and J. Wright, eds., *Mesohelladika: Le Grèce Continentale au Bronze Moyen. Bulletin de Correspondance Hellénique Supplément* 52, pp. 803–15.
- Wright, J. C., J. F. Cherry, J. L. Davis, E. Mantzourani, S. B. Sutton, and R. F. Sutton, Jr., 1990. “The Nemea Valley Archaeological Project: A Preliminary Report,” *Hesperia* 59: 579–659.
- Xenaki-Sakellariou, A., 1958. *Les Cachets Minoens de la Collection Giamalakis. Études Crétoises* X. Paris: École française d’Athènes.
- Xoplaki, E., 2002. *Climate Variability over the Mediterranean*. Ph.D. dissertation, University of Bern.
- Xoplaki, E., J. Luterbacher, and J. F. González-Rouco, 2006. “Mediterranean Summer Temperature and Winter Precipitation, Large-Scale Dynamics, Trends,” *Il Nuovo Cimento* 29(1): 45–54.
- Yaalon, D. H., 1997. “Soils in the Mediterranean Region: What Makes Them Different?,” *Catena* 28: 157–69.
- Yasur-Landau, A., 2005. “Old Wine in New Vessels: Intercultural Contact, Innovation and Aegean, Canaanite and Philistine Foodways,” *Tel Aviv* 32: 168–91.
- Yasur-Landau, A., 2010. *The Philistines and Aegean Migration at the End of the Late Bronze Age*. Cambridge: Cambridge University Press.
- Yule, P., 1980. *Early Cretan Seals: A Study of Chronology*. Mainz: Philipp von Zabern.
- Zangger, E., 1991. “Prehistoric Coastal Environments in Greece: The

- Vanished Landscapes of Dimini Bay and Lake Lerna,” *Journal of Field Archaeology* 18: 1–15.
- Zangger, E., 1993. *The Geoarchaeology of the Argolid*. Berlin: Gebrüder Mann Verlag.
- Zangger, E., 1994a. “Landscape Changes around Tiryns during the Bronze Age,” *American Journal of Archaeology* 98: 189–212.
- Zangger, E., 1994b. “The Island of Asine: A Palaeogeographic Reconstruction,” *Opuscula Atheniensia* 20: 221–39.
- Zangger, E., M. E. Timpson, S. B. Yazvenko, F. Kuhnke, and J. Knauss, 1997. “Landscape Evolution and Site Preservation,” *Hesperia* 66: 549–641.
- Zerner, C., 1978. *The Beginning of the Middle Helladic Period at Lerna*. Unpublished Ph.D. dissertation, University of Cincinnati.
- Zerner, C., 1993. “New Perspectives on Trade in the Middle and Early Late Helladic Periods on the Mainland,” in C. Zerner, P. Zerner, and J. Winder, eds., *Wace and Blegen: Pottery as Evidence for Trade in the Aegean Bronze Age, 1939–1989*. Amsterdam: J. C. Gieben, pp. 39–56.
- Zervakis, V., D. Georgopoulos, A. P. Karageorgis, and A. Theocharis, 2004. “On the Response of the Aegean Sea to Climatic Variability: A Review,” *International Journal of Climatology* 24: 1845–58.
- Zuckerman, S., D. Ben-Shlomo, P. A. Mountjoy, and H. Mommsen, 2010. “A Provenance Study of Mycenaean Pottery from Northern Israel,” *Journal of Archaeological Science* 37: 409–16.

Index

- Abydos 76
- accretional barrier *see* coastal landforms
- acculturation 276, 282
- Acheron River (Epirus) 141–142, 147–150, 166, 169–170
- Adriatic Sea 29–30, 94, 110
- Aegean islands 1, 7, 17–18, 50, 64, 108, 110, 114, 178, 199, 221, 264, 282–283
 - Aegean List 28–29, 86
 - Aeolian islands 22, 30
 - aeolian landforms 94, 146, 154
 - aerial photographs 162–163, 244
 - Aetopetra (Corinthia) 226
 - Agamemnon 134, 197
 - agency, human 28, 128–129, 204–205
 - in soil loss 156
 - Agouridis, Christos 112–114, 191
 - agriculture *see* agro-pastoral adaptations
 - agro-pastoral adaptations 8, 19, 70–71, 136, 140, 156, 189, 192, 240, 245, 254, 260–265, 269, 273, 277, 280, 282
 - Ahhiyawa 21, 29–30, 36, 64, 274, 276
 - Aidonia (Corinthia) 233
 - Aigina 6, 35, 58, 64, 87, 191, 194, 197, 213–243, 253, 258–259, 264–270
 - see also* Kolonna
 - Aigina Shaft Grave 223–225, 231
 - Aigina treasure 222–225
 - Aigion (Achaia) 197
 - Akhenaten 28–29, 63
 - Akrotiri (Thera) 5, 37–41, 46, 52–58, 61–64, 71–72, 75–77, 86, 88, 132, 159–160, 208, 288
 - see also* West House; Flotilla Fresco
 - Akrotirio Trelli (Corinthia) 244, 248, 250
 - Alalakh (Turkey) 41
 - Alashiya 36, 66
 - Alcinous 134
 - Almyros Plain (Thessaly) 282
 - Alpheios River (Elis) 142, 152

- Amarynthos (Euboea) 201
- Ambracian Gulf 141, 199
- Amenhotep II 28, 54
- Amenhotep III 28
- Amnisos (Crete) 28, 174
- Amurru 29–30
- anabatic wind 95
- Anatolia (Turkey) 13, 25, 33–34, 36, 43, 46, 64, 102, 111, 142, 145, 174, 178–180, 223, 272–276
 - anchorages 1, 4–6, 9–10, 46, 63, 71, 86–89, 96, 102, 104, 108, 110, 113, 115, 139–142, 149–151, 160, 165, 171–176, 180, 189, 192, 213–216, 246, 250–251, 263, 267, 273, 276, 286
 - defined 4
 - discovery of 139–143
 - typologies of 171–174
- Ancient Harbour Facies 158, 171
- Ancient Harbour Parasequence 157–158, 171
- Andros (island) 94, 206
- Angelokastro (Corinthia) 263
- Angistri (island) 214–215
- annales* history 116, 269, 284
- Apatheia (Argolid) 236
- Aphaia sanctuary (Aigina) 227, 242, 265
- Aplomata (Naxos) 75
- Arapiza (Corinthia) 226
- Arcadia 18, 70
- archipelago, Aegean 5, 187, 200, n:273
- Argive Plain 16, 142, 230, 236
- Argolic Gulf 26, 43, 195, 197–198, 203, 236, 289
- Argolid 6–8, 14, 16, 18, 21, 29, 32, 44, 50, 156, 193, 195, 201, 220, 233–236, 239, 242–243, 256–257, 262–265
- Argolid Exploration Project 156
- Argonautica* of Apollonius of Rhodes 136
- Argos (Argolid) 16, 230, 234, 243, 289
- Arrhenius, Olof 177
- artisans 13, 44, 222, 225
- Asia Minor 21, 24, 37, 45, 50, 64, 110, 141, 199, 208, 212, 274–275
- Asia Minor Current 179
- Asine (Argolid) 16, 43, 50, 142, 222, 228, 243, 289
- Assiros (Macedonia) 199
- Assyrians 25, 30, 33
- Athens (Attica) 14, 18, 193, 198, 215, 234, 259
 - Acropolis south slope 234

Agora [234](#)
 Athos peninsula [102](#)
 Attica [18](#), [22](#), [23](#), [84](#), [85](#), [111](#), [193](#), [213](#), [215–216](#), [226](#), [228](#), [234](#),
[236](#), [237](#), [239](#), [263–264](#), [283](#)
 Ayia Irini (Kea) [54–55](#), [132](#), [160](#), [174](#), [230–231](#), [236](#)
 Ayia Photia (Crete) [78](#)
 Ayia Triada (Crete) [159](#)
 Ayios Gerasimos (Corinthia) [226](#)

 Ayios Konstantinos (Methana) [237](#), [240–243](#), [265](#)
 Ayios Kosmas (Attica) [237](#)
 Ayios Petros (island) [266](#)

 Babylonians [25](#), [33](#)
 ballast [164–165](#), [248](#), [251](#)
 Barabási, Albert-László [208](#), [289](#)
 barley [221](#), [267](#)
 barrier islands *see* [coastal landforms](#)
 basileus [133](#)
 bathymetry [97](#), [121](#), [146](#), [248](#)
 beaches *see* [coastal landforms](#)
 Beaufort wind scale [85](#), [103](#), [213](#)
 Beirut [158](#)
 Berbati Valley (Argolid) [16](#), [263](#)
 Berg, Ina [175](#), [285](#), [290](#)
 Besonen, Mark [166](#), [169](#)
 Biqa valley (Lebanon) [189](#)
 Black Sea [97](#), [136](#), [196](#)
 Black Sea Water (current) [97](#), [213](#)
 Blue, Lucy [171–172](#)
 boar's tusk helmets [40](#), [41](#), [54](#), [224](#)
 boats
 canoes [38](#), [39–40](#), [51](#), [72–74](#), [77](#), [81–84](#), [86](#), [87](#), [110](#), [126](#)
 defined [2](#)
 fishing boats [73](#), [74](#), [76](#), [78](#), [80](#), [132](#), [186](#), [189](#), [192](#), [266](#)
 models [37](#), [38](#), [42–43](#), [48](#), [50–52](#), [59](#), [61–63](#), [71](#), [72](#), [76](#), [80–81](#),
[88](#), [186](#)
 reed *papyrella* [72](#), [76–77](#), [81](#), [84–86](#)
 rowboats [73](#), [74](#), [78](#), [192](#), [266](#), [268](#)
 Boeotia [14](#), [18](#), [21](#), [161](#), [201](#), [230](#), [231](#), [282](#)
 bogs *see* [wetlands](#)
 Bonn group [200](#)
 bora wind [93](#), [94](#), [106](#)
 Bosphorus [96](#), [136](#)

Bourdieu, Pierre 123, 128–129
 Boyce, Joseph 248
 Braudel, Fernand 203
 breakwaters 4, 5, 46, 119, 121, 149, 157, 158, 164, 178, 250
 Broodbank, Cyprian 92, 86–87, 110, 115, 125, 184, 194, 197,
 205–206, 208, 211, 285–286, 289
 Building P, Kommos 40, 159–160
 burial mounds 119
 Burns, Bryan 27

cabotage 26, 32, 33, 35, 44, 195, 200, 203, 275
 Caesarea Maritima (Israel) 158, 164, 165
 cairns, stone 119–120, 122, 252, 254–257
 Canaanite jars 25, 283
 Canaanites *see* Syro-Canaanite
 Canaanite texts 35–36
 cannibalism 136–137
 Cape Drepanon (Crete) 121
 Cape Gelidonya wreck *see* shipwrecks
 Cape Malea (Laconia) 193
 Cape Mykale (Turkey) 199, 276
 Caroline Islands 72, 126–127, 129
 carrying capacity 209
 Çatalhöyük (Turkey) 302
 Catalogue of Ships, Homeric 6, 197
 cattle 192, 201, 221, 235, 240
 ceramic petrography 34, 200
 Chalandriani-Kastri (Syros) 86, 87
 Chalkidiki peninsula (Macedonia) 22
 chamber tombs 17, 22, 236, 274, 278
 Chios (island) 111, 122
 Chrysoulaki, Stella 172
 cisterns 192, 193, 268
 “Clashing Rocks,” 136
 cliffs, coastal *see* coastal landforms
 climate *see* environment, Mediterranean
 Cline, Eric 24–26, 28, 30, 34
 coastal configuration 108, 172, 246
 aggradational coasts 143–144, 157–158, 171
 anthropogenic impacts 156–158, 171
 high- and low-energy coasts 144, 146, 158, 167, 171–174, 250
 open coasts 144–148
 progradational coasts 143–147, 149, 152–154, 156, 158, 171,
 272–273, 277

- protected coasts 115, 144, 148, 150, 171–172, 189, 204, 216, 251
- recessive coasts 144, 148
- regressive coasts 144
- stable and unstable coasts 173
- submerged coasts 135, 144, 148–149, 162–165, 173, 178, 180, 244–250
- transgressive coasts 144, 171, 247
- uplifted coasts 148–149, 162, 173
- coastal geomorphology 5, 142–161
 - geomorphological survey 162–164
 - marine erosion 140–148, 162–163
 - sedimentation 5, 45, 140–158, 164–171, 179–180, 247, 273–277
- coastal landforms
 - accretional barriers and barrier islands 141, 146, 150–157, 167, 179, 287
 - beach ridges and swales 149, 150
 - beachrock 149, 247–248, 250
 - beaches 40, 46, 86, 109, 119–120, 144, 146–152, 154, 158–159, 162, 167, 170–171, 179, 247, 248–250
 - biostratigraphy 168–171
 - constructional and destructional 147–148
 - deltas 5, 141–143, 145, 146, 152–154, 156, 161, 170, 172, 174, 176, 272
 - dunes 154–155, 160, 162
 - estuaries 5, 120, 121, 141, 144, 150–152, 156, 157, 161, 162, 172, 176
 - facies 157, 158, 167–171, 178
 - levees 153–154, 170
 - lagoons 5, 141, 146, 148, 152–157, 160–162, 169, 172–174, 178–179, 248, 287
 - reefs 75, 126, 167, 171, 174, 213
 - salt pans, marshes, and lakes 152, 247
 - sea cliffs 119, 120, 141, 144, 145, 147, 148, 155, 162–163, 171, 216, 259
 - sedimentology 158, 167–168, 171
 - stratigraphy 158, 166–168, 171
 - swamps 149, 151, 154, 170
 - tidal marshes and mudflats 144, 149, 151, 153–154, 170, 247
 - tidal notches 144, 148, 162, 247
 - wetlands 73–74, 76, 142, 155, 161, 189, 251
- coast- and island-hopping 2, 84, 86, 108, 111, 187, 200
- coasting vessel 73, 75–76, 186, 189, 192

- coastscape
 - see also [maritime interaction spheres](#)
 - defined [9–11](#), [188–190](#)
- coastwise voyaging [84](#), [113](#)
- cognitive landscapes [122](#), [185](#), [188](#)
- colonization
 - of Aegean islands [78](#), [108](#), [222](#), n:231
 - internal, MH III/LH I [228](#), [264](#)
 - of Mediterranean [57–58](#), [135–137](#), [196](#), [200](#)
 - Mycenaean [21](#), [64](#), [199](#), [203](#), [262](#), [271](#), [274](#), [276](#)
- complexity, social-political [7](#), [9](#), [12](#), [16](#), [19–20](#), [25](#), [59](#), [83](#), [88](#), [108](#), [112](#), [194–195](#), [217–218](#), [220](#), [226–228](#), [257](#), [262](#), [264](#), [278](#), [287](#), [289](#)
- Conlin, David [191](#)
- Constantakopoulou, Christy [192](#), [194](#), [196](#)
- contested landscapes [256](#), [265](#)
- copper
 - artifacts [64](#)
 - ingots [25](#), [43](#), [44](#), [239](#)
 - smithing [44](#), [218](#)
 - trade of [5](#), [20](#), [30](#)
- core and periphery [28](#), [69](#), [199](#), [235](#), [265](#), [271](#), [278](#), [279](#)
- core area, Mycenaean [7–8](#), [17](#), [200–201](#), [262](#), [276](#)
- cores, geological [153](#), [160](#), [166–170](#), [178](#), [247](#), [250](#), [273](#)
- Corfu see [Kerkyra](#)
- Corinthia [6](#), [45](#), [148](#), [174](#), [176](#), [197](#), [213](#), [215](#), [218](#), [226](#), [232–237](#), [243](#), [246](#), [256](#), [263](#), [266](#), [282](#)
- Corinthian Gulf [45](#), [201](#), [215](#), [226](#)
- Coriolis effect [99](#)
- corridor houses
 - Early Bronze Age [178](#), [217–218](#), [238](#), [257](#), [264](#)
 - Mycenaean [238](#), [274](#), [279–280](#)
- Cosmopoulos, Michael [60](#)
- cost weighted path distance [209](#), n:210
- cothon [164](#)
- Crego, Donna May [231](#)
- Cretan Arc [94](#), [99](#)
- Cretan hieroglyphic [37](#)
- Crielaard, Jan-Paul [112](#)
- cult see [sanctuaries and cult centers](#)
- culture area, Mycenaean [7](#), [186](#), [199](#) see [maritime culture region](#), [Mycenaean](#)
- Curry, Joseph [144](#)

cyclogenesis [92–93](#)
cyclonic and anticyclonic currents [97–101](#)
cyclonic and anticyclonic winds [92–93](#), [106](#)
cyclopean masonry *see* [masonry](#), [Mycenaean](#)
Cyclopes [68](#), [136–137](#)
Cypro-Minoan script [29](#)
Cyprus [19](#), [21](#), [23](#), [25–26](#), [29](#), [30](#), [36](#), [44](#), [50–51](#), [63–64](#), [66](#), [70](#),
[88](#), [93](#), [152](#), [164](#), [174](#), [202](#), [209–210](#), [n:242](#)

Dakoronia, Fanouria [78](#)
Darcque, Pascal [281](#)
Dardanelles [97–100](#), [102](#), [119](#), [136](#), [154](#)
Darwin, Charles [184](#)
Daskaleio-Kavos (Keros) [206](#)
“definite places,” [196](#), [204](#)
Deirmentepe (Turkey) [274](#)
deltas *see* [coastal landforms](#)
Dickinson, Oliver [224](#)
diet *see* [stable isotope analysis](#)
Dimini (Thessaly) [277–283](#)
Diomedes [111](#), [198](#)
diver survey [248](#), [251](#)
Dokos (island) [43](#), [193–194](#)
dolines [181](#)
Dorian invasion [19](#)
Doro Channel [94](#), [102](#)
dunes *see* [coastal landforms](#)

East Aegean Koine [276](#)
East Alley, Korakou (Corinthia) [233](#)
Eastern Corinthia Archaeological Survey (EKAS) [175](#), [176](#), [243](#),
[247](#)

ebony [25](#)
ecotones [183](#)
eddies [99–102](#), [135](#), [213](#)
Egypt
 Aegean imports in [21](#), [28](#), [63](#)
 chronology [7](#)
 exports to Aegean [21–22](#), [28](#)
 harbors in [112](#), [121](#)
 in Homer's *Odyssey* [67](#), [111–112](#)
 influence in Aegean [13](#), [223](#)
 maritime contacts with [1](#), [5](#), [21](#), [28–30](#), [82–83](#), [88](#), [159](#)
 Mycenaean mercenaries in [29](#)
 objects on Uluburun shipwreck [n:25](#)

- and the “Sea Peoples,” 19–20
- ships and boats 49, 51–54, 58, 72, 76–77
- texts and archives 19, 21, 28–29, 34–36, 66, 120
- tomb paintings 41, 72
- El Niño and La Niña 91
- electromagnetics *see* geophysical survey
- Eleusis (Attica) 234, 237, 267
- Elis 141, 146, 152–153, 174, 176
- emporion 22, 33
- Enkomi (Cyprus) 29, 32, 174
- environment, Mediterranean
 - climate, general 45, 90–92, 104, 107, 116, 137–138, 142, 145, 152, 156, 169, 204, 269, 273
 - currents 37, 82, 86, 96, 97–102, 104, 108, 111, 113, 114–115, 119, 121, 125, 135–136, 143, 146, 149, 151, 153–154, 157, 170, 179, 209, 213, 26, 270
 - drought 19, 107, 156
 - geographic scales 90–91
 - gradients in temperature, density, pressure 91–96, 99, 100
 - precipitation 91–97, 100, 103–106, 145–146, 152–153, 268, 273
 - salinity 97–99, 150, 152, 154, 168–169
 - seasonality 4, 35, 40, 82, 87, 91–93, 96, 99–100, 103–108, 114, 144–145, 161, 189, 202, 213
 - storms 91–93, 96, 101–109, 135, 139–140, 149, 155, 170, 209, n:213
 - tides 143–144, 146, 148–153, 168, 178, 247–248, 250
 - water masses 94, 97–99
 - waves 83, 85, 93, 101–102, 107, 109, 119, 121, 135, 143–150, 152–155, 157–158, 170, 189, 213, 250
 - weather systems 90–92
 - winds 37, 53, 58, 61, 63, 68–69, 73, 83–86, 92–97, 100–104, 106, 108, 111, 113, 114–115, 119, 121, 133, 136, 139–140, 144, 146, 153–155, 174, 189, 191, 204, 209, 213–214, 250, 266, 270
 - see also* bora; meltemi ; sirocco ; vardari
- Ephesos (Turkey) 45
- Ephoreia of Underwater Antiquities (*Enalion*), Greece 142, 248
- Epidauros (Argolid) 55, 56, 214, 267–268
- estuaries *see* coastal landforms
- ethnography and ethnoarchaeology 2, 5, 34, 46–47, 71, 74, 80–84, 109–110, 112, 125–129, 192–195, 256, 265–269, 288
- Euboea 23, 24, 43, 94, 96, 102, 111, 141, 150, 155, 191, 193, 198, 201, 288
- Euboean Gulf 23, 79, 283–284, 289

eustasy *see* [sea level](#)

Eutresis (Boeotia) [226](#)

événement.

See also [annales history](#)

Evraionisos (island) [192–193](#)

ex oriente lux [27](#)

exogamy [116](#), [216](#)

experimental voyages [53](#), [82](#), [84–86](#)

facies *see* [coastal landforms](#)

faience [25](#), [28](#), [223](#)

faunal remains [73](#), [169](#), [178](#), [220–221](#), [240](#), [273](#), [288](#)

Feinberg, Richard [84](#)

Ferula communis (giant fennel) [72](#), [77](#), [81](#)

fetch [153](#)

Feuer, Bryan [278](#)

figurines [17](#), [80](#), [217](#), [235](#), [238](#), [240](#), [242](#), [263](#), [274](#), [280](#)

figs [25](#), [221](#)

fish and shellfish [25](#), [32](#), [50](#), [73](#), [75](#), [112](#), [113](#), [119](#), [121](#), [221](#),
[266](#), [280](#), [283](#), [288](#)

fishing [47](#), [72–76](#), [78–80](#), [113](#), [124](#), [126](#), [131](#), [132](#), [138](#), [161](#), [186](#),
[189](#), [192](#), [247](#), [266](#), [288](#)

flaked stone *see* [lithics](#)

Flemming, N. C. [171](#)

floodplains [143](#), [153](#), [161](#), [170](#), [n:273](#)

Flotilla Fresco, Akotiri (Thera) [5](#), [38–41](#), [46](#), [50](#), [52](#), [54–56](#), [60–](#)
[62](#), [71–73](#), [75–77](#), [88](#), [132](#), [159](#), [160](#)

foraminifera *see* [macro- and microfauna](#)

forest resources [266–267](#), [278](#)

formal and stylistic analysis [6](#), [8](#), [54](#), [59](#), [200](#), [218](#), [222](#), [233](#), [235](#),
[253](#)

Forstenpointner, Gerhard [221](#)

fortifications, coastal [64–67](#), [112](#), [178](#), [184](#), [192](#), [217–218](#), [220](#),
[226](#), [227](#), [230–231](#), [252](#), [257](#), [258–260](#), [264](#), [265](#)

Fournoi cluster [257](#)

fractals [204](#)

frame-first construction *see* [ship construction](#)

frescoes *see* [wall painting](#)

“frying pan,” Cyladic [6](#), [112](#), [113](#)

Franchthi Cave (Argolid) [74](#), [84–85](#), [88](#), [108](#), [142](#)

Galik, Alfred [221](#)

galley [42](#), [55](#), [57–71](#), [83–84](#), [125](#), [130](#), [132–133](#), [186](#)

see also [ships](#), [Mycenaean](#)

- “galley subculture,” 69–71, 125, 132–133
 Gelidonya *see* [shipwrecks](#)
 Gell, Alfred 122–123
 genetic viability 216, 268
 geochemical analysis 158, 169
 Geographic Information Systems (GIS) 176, 191, 209
 geomorphology *see* [coastal geomorphology](#)
 geophysical survey 164, 248
 Gibraltar, Straits of 97
 Giddens, Anthony 128–129
 Gla (Boeotia) 18, 177
 glacial maximum 140–141
 Glykys Limin (Epirus) 174, 199
 goats *see* [pastoralism](#)
 “goat island,” 192–193
 gold 25, 33, 54, 76, 222–225
 Gonia (Corinthia) 226, 282
 Goodman, Beverly 180
 Gournia (Crete) 40, 159–160, n:290
 Grave Circles A and B *see* [shaft graves, Mycenae](#)
 Gregory, Timothy 192
 ground stone *see* [lithics](#)
 ground truthing 162, 165, 176
 gyres 99–100
 Gytheion (Laconia) 104

habitus of maritime life 9, 128–129, 133–138, 288
 Hall 64, Pylos 56
 harborless coasts 102, 141
 Hattusa (Turkey) 41, 64
 Hattusili III 36
 harbors
 defined 4
 sheltered (protected) 86–87, 106–107, 115, 144, 149, 157–158,
 160, 179, 189, 204, 216, 246, 250–251, 277
 typologies 171–174
 headlands *see* [promontories](#)
 Helike (Achaia) 197
 Herakleia (island) 203–204
 Hermione (Argolid) 193
 Hesiod, *Works and Days* 104, 134, 138, 158, 198, 201, 288
 heterarchy, social-political 185, 212, 226, 281–282
 hierarchy, social-political 14, 19, 70, 88, 125, 132, 185, 206, 208,
 212, 227, 280–282

Hiller, Stefan 222–223
 Hisarlik *see* Troy
 Hittites 202, 274
 Hittite texts 21, 29–30, 36–37, 64, 66, 120, 274
 see also texts
 Hodder, Ian 175
 Holocene paleoenvironments 91, 107, 144–145, 152–153, 156–157, 170, 179, 247, 272
 Homer, *Iliad* 112, 119, 159. 197–198
 Homer, *Odyssey* 9, 37, 49, 67–68, 71, 111–112, 119, 123, 130, 133–137, 184, 192, 288
 Homeric Catalogue of Ships 6, 197
 Horden, Peregrine, and Nicholas Purcell 116–117, 139, 188–190, 196, 201, 203–204, 216, 269–270, 284–286
 House of the Tiles, Lerna 218
 hull-first construction *see* ship construction
 Hydra (island) 193

 Ialysos (Rhodes) 64, 209, 210
 Iasos (Turkey) 275–276, 289
 ice cores 107
 Iklaina (Messenia) 37, 41, 60, 186
ikrion (pl. *ikria*) 38, 39–40, 55–57, 60, 75, 77
Iliad of Homer *see* Homer, *Iliad*
 “imperfect optimisation” model 206–210
 Indo-Persian low pressure system n:92
 ingots
 copper 25, 32, 43, 44, 239
 glass 25
 tin 25, 44
 Institute for Geology and Mineral Exploration (IGME) 142, 143
 interior, coastal relations with 4, 9, 32, 87, 183, 185, 186, 188–190, 196–197, 216, 228, 252, 256, 263, 264, 266, 274, 278, 283
 “international spirit,” EH II 217–218
 interregional/intercultural maritime interaction sphere *see* maritime interaction spheres
interscalmum 62
 intertidal zone 148, 149, 151
 intervisibility
 in coastscapes and small worlds 190, 215–216, 275
 of enclosures and cairns at Korphos 256
 Iolkos (Thessaly) 279
 Ionian Islands 18
 Ionian Sea 30, 99, 110, 124, 147, 199, 203

Iron Age [37](#), [58](#), [63](#), [112](#), [124](#), [137](#), [179](#), [198](#)
iron technology [23](#)
island archaeology [184–185](#)
island biogeography [184](#)
islandscapes [9](#)
isostasy *see* [sea level](#)
Isthmus of Corinth [215](#), [226](#), [263](#)
Isthmus of Ierapetra (Crete) [290](#)
Italy [22](#), [23](#), [25](#), [30](#), [88](#), [103](#), [135](#), [137](#), [200](#), [202](#)
Israel [41](#), [43](#), [142](#), [164](#), [174](#)
Ithaca (island) [137](#)
ivory [24](#), [25](#), [27](#), [30](#), [44](#), [76](#), [224](#), [225](#)
Izmir, Bay of [178–179](#), [230](#)

Jericho [49](#)

Kalamas River (Epirus) [141](#)
Kalamianos (Corinthia) [165](#), [176](#), [233](#), [243–271](#)
 as coastscape in Saronic small world [263–265](#)
 as Early Bronze Age regional center [253–258](#)
 as Late Bronze Age regional center [258–263](#)
 oral history [265–269](#)
 paleocoastal reconstruction [246–251](#)
 terrace walls [245](#), [252](#), [258](#), [260–263](#), [265](#)
Kanakia (Salamis) [237–240](#), [243](#), [265](#), [271](#)
Kanesh *karum* (Turkey) [33](#)
Kapsali Bay (Kythera) [105–107](#)
Kardulias, P. Nick [28](#), [192–193](#)
Karpethos (island) [94](#)
Karystos (Euboea) [111](#), [201](#)
Kastro (Thessaly) [278](#), [281](#), [283](#)
katabatic wind [95](#)
Kato Zakro (Crete) [28](#)
Kavousi (Crete) [290](#)
Keay, Simon [164](#)
keel *see* [ship construction](#)
Keftiu [28](#)
Kenchreai (Corinthia) [148](#), [268](#)
Kerkyra (Corfu island) [72](#), [76](#), [81](#), [84](#), [87](#)
Keros (island) [206](#)
Kiapha Thiti (Attica) [234](#), [264](#), [274](#)
Kilian-Dirlmeier, Imma [224](#)

kinship [6](#), [81](#), [116](#), [125](#), [190](#), [191](#), [195](#), [268](#)
Kirrha (Phocis) [226](#)

kilns *see* [pottery](#)
 Kition-Bamboula (Cyprus) [164](#), [174](#)
 Klazomenai (Liman Tepe, Turkey) [178](#)
 Knappett, Carl [205–211](#)
 Knossos (Crete) [14](#), [21](#), [28](#), [71](#), [119](#), [131](#), [199](#), [208](#), [232](#), [289](#)
 Kofini Dam (Argolid) [161](#)
koiné, cultural [7](#), [17](#), [200](#), [230](#), [237](#), [242](#), [276](#)
 Kolonna (Aigina) [6](#), [35](#), [58](#), [59](#), [64](#), [88](#), [213](#), [214](#), [216](#), [218–234](#),
[242–243](#), [253](#), [257](#), [270–271](#)
 connectivity of [231–232](#)
 EH III hoard [223](#)
 Färberhaus [218](#)
 faunal remains [221](#)
 Haus am Felsrand [218](#)
 House of the Pithoi [218](#)
 human skeletal remains [222](#)
 and Kalamianos [263–265](#), [270–271](#)
 Large Building Complex [220–222](#), [228](#)
 marine resources [221–222](#)
 Minoan residents at [220](#), [222](#)
 plant remains [221](#)
 potting industry [226–230](#)
 relations with Mycenae [232–237](#), [242–243](#), [270](#)
 “Shaft Grave,” [223–226](#)
 sphere of influence [226–231](#), [271](#)
 urban phases [218–220](#), [228](#)
 Weißes Haus [218](#)
 Windmill Hill [242](#)
 Kom el-Hetan (Egypt) [36](#)
 Kommos (Crete) [21](#), [22](#), [29](#), [40](#), [121](#), [149](#), [159](#), [174](#), [222](#)
 Konsolaki-Yiannopoulou, Eleni [236](#)
 Korakou (Corinthia) [226](#), [233](#), [282](#)
 Korphi t'Aroniou (Naxos) [78](#)
 Korphos (Corinthia) [47](#), [213](#), [243–248](#)
 as Bronze Age regional center [251–265](#)
 coastal geomorphology of [246–248](#)
 as modern *proti skala* [267](#)
 Kraft, John [143–144](#)
 Kramer-Hajos, Margaretha [284](#)
 Kvapil, Lynne [261](#)
 Kydonia (Crete) [28](#)
 Kyme (Euboea) [43](#)
 Kynos (East Lokris) [50](#), [58](#), [65–68](#), [70](#), [73](#), [75](#), [78](#), [79](#)
 Kyra (island) [268](#)

Kyrenia II 209

Kythera (island) 28, 94, 104–107, 201, 228, 243

Laconia 18, 104, 174, 201

lagoons *see* coastal landforms

Lake Karla (Thessaly) 282

Lake Kopais (Boeotia) 161

lakes 152–154, 160–161, 170, 172, 174

land breeze 94–95, 103, 104

landmarks *see* navigation

landscape archaeology 9, 162, 185, 188, 262, 290

Latmian Gulf (Turkey) 174, 272–273, 275–276

Lavrion (Attica) 22, 84–85, 231

lawagetas 15, 131

Lazarides (Aigina) 227

lee shores 61, 96, 103, 106, 111, n:171

Lefkandi (Euboea) 22, 70

Leidwanger, Justin 191, 209

Lerna (Argolid) 16, 218, 222, 224, 228, 230, 234, 243, 257, 289

House of the Tiles 218

shaft graves 224, 230

Levant 19, 21, 23, 26, 28–30, 36, 49, 66, 70, 88, 97, 110, 112, 142, 202, 223

levy fleets 125, 131

Lesbos (island) 111

Libyan Sea 108

lighthouses 5, 120, 122

Liman Tepe (Turkey) 176, 178–180

liminality, of coasts 9, 183

Limnes (Argolid) 263

Linear A 27, 55, 231

see also texts

Linear B 7, 14–18, 20–21, 24, 34, 35–36, 64–65, 74–75, 88, 120, 125, 130–132, 201–202, 242, 275, 280, 281, 286–288, 290

see also texts

lithics 195, 200, 238, 253–254

flaked stone 254

ground stone 87, 216, 238, 253, 263–264

“Little Ice Age,” 91, 107

Loader, N. Claire 262
 longboats, Cycladic 40, 51, 61, 63, 64, 68, 81–83, 112, 125, 214,
 n:251
 Longopotamos Valley (Corinthia) 233
 longshore currents and deposits 146–147, 149, 152, 160, 168,
 170, 179
longue durée
 see also annales history
 Louros Athalassou (Naxos) 112–113
 “Lower East Aegean–West Anatolian Interface,” 276
 Lystraegonians 137

 macro- and microfauna 158, 169, 170, 178, 273
 foraminifera 168–169, 171, 178, 247
 mollusks 161, 168, 221
 ostracods 168–171
 Maeander (Menderes) River (Turkey) 145, 154, 272–274, 276–
 277
 magnetometry *see* geophysical survey
 Malia (Crete) 78–79, 159
 Malia, Gulf of (Thessaly) 119, 154
 Malkin, Irad 196, 204, 211
 Malta 109
 maps
 Cartesian 122–124, 177
 cognitive/mental 9, 122–123
 cost-weighted path distance 209–210
 Maran, Joseph 230, 282
 Marathon (Attica) 184
 Marinatos, Spyros 39
 masonry, Mycenaean 228, 246, 259, 261, 262
 maritime coastal communities 46–47, 86–88, 123–126, 138, 183–
 184, 190, 288–289
 at modern Korphos 266–270
 Mycenaean 69–70, 72, 114, 124–125, 130–133, 200
 Pacific Ocean 109–110, 126–129
 maritime culture region, Mycenaean 186, 199–202
 see also culture area, Mycenaean
 maritime cultural landscapes 46, 71, 142–143, 175–176, 185–
 190, 270–272, 283, 289–290
 maritime durées 116, 130
 maritime interaction spheres 10, 47, 185–203, 276
 maritime knowledge 26–27, 45, 69, 82, 107–124, 130–136, 138,
 n:184, 189, 192, 200, 203–204, n:288

- transmission of 46–47, 125–129, 137, 269, 288
- maritime lore 127–129, 135–138, 286, 288
- maritime small worlds 6, 10–11, 23, 45, 47, 71–72, 76, 108, 109, 117–118, 185–187, 190–198, 203–204, 206, 212, 286–289
 - see also maritime interaction spheres
 - in the Bay of Volos 277–283
 - in the Latmian Gulf 271–277
 - in the Saronic Gulf 213–271
- maritime trade
 - disruptions in 19–20, 69, 208
 - in obsidian 31, 84–87, 108, 195, 254, 257, 264
 - interregional (long-distance) 11, 19–37, 112, 115, 117–118, 126, 132–134, 187, 195–196, 202–203, 254, 264, 285–286
- local-scale 16, 23, 26–27, 31–32, 35, 44–45, 73, 75–76, 86–88, 117–118, 131, 140, 189, 191, 193, 195–196, 198, 203, 239, 254, 266–268
 - mechanisms of 30–33
 - in metals 22, 24, 26, 27, 34, 44, 75, 88, 130, 274
 - regional-scale 6, 23, 24, 27, 32, 73, 75, 86–88, 140, 195–196, 198–202, 235, 242, 271, 275, 283
- Mark, Samuel 49
- Marriner, Nick 157, 173
- marshes see coastal landforms
- Martin, Richard 137
- maximum marine transgression see sea level
- McGrail, Séan 66
- Medinet Habu (Egypt) 36, 54, 65
- Megali Magoula (Argolid) 227–228, 234–236, 242–243, 265, 271
- megaron (pl. *megara*)
 - Megara A and B, Dimini 279–281
 - megara, Kanakia 238–239
 - megaron, Ayia Triada 159
 - Megaron, Mycenae 56
- Melos (island) 31, 84–85, 87, 219, 224, 257, 264
 - meltemi* wind (ancient Etesians) 93–95, 100, 102, 104, 106, 121, 213
- Menelaion (Laconia) 134
- Menelaus 111, 133, 134
- mentalité* 37, 116, 130, 133
- mercenaries 29, 36, 130, 194
- merchants 24–27, 33, 44, 84, 133–135, 198, 202, 266–269
- Merneptah Stele 36
- Mesara Plain (Crete) 159–160

Mesopotamia [22](#), [32](#), [121](#), [223](#)
 Messenia [13–14](#), [60–61](#), [69–70](#), [130–132](#), [152](#), [174](#), [236](#), [257](#),
[290](#)
 metals trade *see* [maritime trade](#)
 metal vessels [15](#), [25](#), [64](#), [65](#)
 Methana (Argolid) [28](#), [87](#), [214](#), [215](#), [240–241](#), [258](#), [259](#), [264](#)
 Methana Survey Project [258](#)
 Metopi (island) [214](#)
 microecologies and microregions [6](#), [17](#), [72](#), [80](#), [88](#), [105](#), [117](#), [139](#),
[189–190](#), [196](#), [201](#), [203–205](#), [252](#), [262](#), [269](#), [284–286](#)
 Minet el-Beidha (Syria) [33](#)
 “Middle Helladic hiatus,” [220](#), [228](#), [264](#), [270](#), [286](#)
 Midea (Argolid) [14](#), [16](#), [18](#), [243](#), [289](#)
 Miletos (Turkey) [21](#), [32](#), [36–37](#), [45](#), [64](#), [141](#), [142](#), [202](#), [212](#), [272–](#)
[277](#)
 Millawanda (Mycenaean Miletos) [21](#), [36–37](#), [274–275](#)
 millstones, Aiginetan [216](#), [253](#)
 “mini island networks,” [196](#)
 Minoan Crete
 boat models [42](#)
 chronology [2](#)
 colonies [64](#), [274](#), [276](#)
 environmental conditions [94](#), [96](#), [108](#), [121](#)
 frescoes in Near East [41](#)
 harbors [22](#), [40](#), [149](#), [159](#), [163–164](#), [172](#), [174](#)
 under Mycenaean influence [21](#), [160](#), [199](#)
 maritime trade networks [20–21](#), [24–25](#), [27–29](#), [41](#), [202](#), [208](#)
 pottery [16](#), [21](#), [44](#), [75](#), [196](#), [233](#)
 relations with Ayia Irini [231](#), [236](#)
 relations with Kolonna [218](#), [220–226](#), [231](#), [264](#), [286](#)
 relations with Mycenaean world [12–13](#), [28](#), [29](#), [59](#), [88](#), [195](#),
[233–234](#), [236](#), [240](#), [243](#)
 seals and sealings [42](#), [53–55](#), [77–78](#)
 ships [53](#), [59–63](#), [160](#)
 ship sheds [40](#), [121](#), [132](#), [159–160](#), [289](#)
 sites in “Aegean List,” [28–29](#)
 “thalassocracy,” [66–67](#)
 Mirabello, Gulf of (Crete) [45](#), [196](#), [203](#), [290](#)
 Mitrou (East Lokris) [22](#), [186](#)
 Mochlos (Crete) [149](#), [290](#)
 mollusks *see* [macro- and microfauna](#)
 Momigliano, Nicoletta [275](#)
 Mongolian high pressure system [92](#)
 Morhange, Christophe [157](#), [173](#)

mortise-and-tenon joinery 49–50

see also [ship construction](#)

Mountjoy, Penelope 200, 234

moyenne durée

see also [annales history](#)

Munsell soil color chart 166

Mycenae (Argolid) 6, 12–14, 16–18, 22, 24, 28, 36–37, 40, 49, 50, 56, 64, 65, 68, 71, 134, 183, 197, 199, 201, 208, 213, 223–228, 232–235, 238, 240, 242–243, 246, 262–265, 270–271, 281, 289

Naqada II (Gerzean) 52

na-u-do-mo (shipbuilder) 130

Nauplion (Argolid) 16, 28, 215

“naval fresco,” Pylos 60

navigation

celestial 37, 109–113, 119, 121

coastal hazards 46, 72, 73, 75, 108, 109, 113, 119, 135, 189, 234, 266

coastwise voyaging 84, 113

dead reckoning 109

landmarks 109, 118–120, 123, 124

master navigators 113, 124–129, 132, 203, 288

night voyaging 108, 111–113, 123, 192, 200, 266

open-sea voyaging 2, 30, 74, 83–84, 110–114, 138, 192, 200, 203, 221

sailing ranges, daily 68, 73, 83, 86, 112, 138, 191, 192, 194, 206, 214–215

seamarks 9, 118, 120–121, 124, n:126

segmented journeys 84, 108, 119–120, 123, 135, 187

skymarks 118, 121–122, 124

“star path steering,” 111, 126

winter voyaging 35, 40, 101, 103–104, 106, 266

windward sailing 83–84

Naxos (island) 61, 78, 81, 112–113

Nea Epidaurus (Argolid) 267–268

Nebamun, tomb of (Egypt) 54

Nemea Valley (Corinthia) 16, 218, 220, 233, 235

Nestor 111, 133, 134

network analysis *see* [social networks](#)

neutron activation analysis 242

Niemeier, Wolf-Dietrich 274

Nile River 73, 76, 111, 135, 145, 154, 174

Nirou Chani (Crete) 159

North Atlantic Oscillation 91–93

obsidian *see* [maritime trade](#)
Oceania [46](#), [110](#), [195](#), [203](#)
“Occidentalia,” [24](#)
Odyssey of Homer *see* [Homer, *Odyssey*](#)
offshore islands [73](#), [136](#), [141](#), [146](#), [149](#), [152](#), [171](#), [174](#), [179](#), [188–189](#), [192–193](#), [214](#), [250](#), [266](#)
oikos [133–134](#)
Oil Merchant group, Mycenae [18](#)
olives and olive oil [25](#), [29](#), [87](#), [193](#), [221](#), [235](#), [260](#), [267](#)
Olson, Donald [100](#)
Olympias (replica trireme) [130](#)
opportunistic use of anchorages [86](#), [139](#), [189](#)
oral histories [5](#), [47](#), [176](#), [183](#), [244](#), [265–270](#)
Orchomenos (Boeotia) [14](#), [61](#)
organic remains [25](#), [34](#), [42](#), [75](#), [151](#), [153](#), [169](#), [170](#), [273](#)
“Orientalia,” [24](#)
orographic rainfall [105](#)
Osmanaga Lagoon (Messenia) [160](#)
ostracods *see* [macro- and microfauna](#)
Ottoman period [189](#)
overland routes and connections [9](#), [32](#), [36](#), [71](#), [84–85](#), [141](#), [183](#), [188–189](#), [197](#), [226](#), [236](#), [252](#), [258](#), [266–268](#)

paddling

see also ships, propulsion

Pagasetic Gulf (Thessaly) [277](#), [282–283](#)

palaces, Mycenaean

collapse [7](#), [17–20](#), [69–70](#), [263](#), [265](#)

control of trade [64–65](#), [70](#), [124–126](#), [130–132](#), [202–203](#)

emergence [12–14](#), [68](#), [226](#), [243](#), [282](#)

Linear B texts and trade [35–37](#), [130–132](#), [202](#), [242](#)

long-distance trade [20–30](#)

political and economic system [7–8](#), [14–17](#), [74–75](#), [88](#)

Palaikastro (Crete) [61](#)

paleocoastal reconstruction [10](#), [16](#), [46](#), [142–143](#), [162–171](#), [174–180](#), [277](#), [289](#)

palynology [156](#)

Panayia Houses, Mycenae [18](#)

Pantou, Panagiota [279–280](#)

Papadimitriou, Nikolas [278](#)

Papageorgiou, Despoina [114](#)

papyrella boat, Corfu [72](#), [76–77](#), [81](#), [84–86](#)

papyrus boats, Egypt [72](#), [76–77](#), [81](#)

Paroikia (Paros) 86
 pastoralism (sheep and goat) 70, 75, 78, 122, 189, 192–193, 201, 221, 240, 258, 260, 267, 273, 282
 Pefkakia (Thessaly) 230, 278, 281–283
 Peloponnese 7–8, 13, 16, 18, 99, 111, 119, 141, 152, 155, 197–198, 201, 215–216, 218, 226, 228–229, 232, 236, 254–256, 264, 283, 290
 Peneios Riveer (Thessaly) 145
 Peneus River (Elis) 152
 penteconter 62, 83
peraia 192, 194, 271
 Perama (Salamis) 266
 Perati (Attica) 22, 70
 Perdikaria (Corinthia) 282
 “periphery model,” 235
 periplus, *pl. periploi*, 123, 135
 Petrakis, Vassilis 66
 Phaeacia 123, 134, 137
 Phaistos (Crete) 28
 Pharonisi peninsula (Corinthia) 254, 255, 261
 Pharsala (Thessaly) 282
 phenomenology 9, 122–124, 135–137, 190–191, 195, 215–216
 Philippa-Touchais, Anna 229–230
 Philistines 50–51, 70
 Phoenicians 134
 Phylakopi (Melos) 51, 86
 phosphate analysis 176–177
 pigs 201, 221, 240
 pilotage 39, 72–73, 89, 108–109, 113, 118, 132, 138, 186, 189
 Pindos Mountains 105, 278
 piracy 20, 58, 64, 66–68, 83, 133, 184, 195
 Piraeus (Attica) 267–268
 place-name studies 28, 120, 131, 176–177, 185
 Point Iria (Argolid) wreck *see* [shipwrecks](#)
 Polanyi, Karl 32–33
 poljes 161, 259
 Poros (island) 214–215, 227, 267
 ports 5, 26, 29, 30, 44, 75, 139, 148, 164, 202, 205, 216, 265, 266, 267, 282
 defined 4
 port of trade 31, 33, 126, 195
porthmeutike 192–194, 198
 Portus (Italy) 164
 pottery

- Aiginetan gold mica fabric [226–227](#), [233](#)
- Aiginetan matt painted [220](#), [225–227](#), [229–231](#), [234](#), [282](#)
- Argive Minyan [227](#)
- characterization studies [6](#), [21](#), [34](#), [200](#), [242](#)
- Fine Grey Burnished [201](#)
- Gray Minyan [227](#), [231](#), [233](#)
- Kamares Ware [224–225](#)
- Keian White-on-Grey [231](#)
- Keian Yellow Slipped [231](#)
- kilns [228](#), [274](#)
- Lustrous Decorated [201](#), [219](#), [228](#), [234](#)
- Magnesia polychrome [230](#), [282](#)
- Marine Style [234](#)
 - as marker of interaction [6–8](#), [17](#), [20–25](#), [28–29](#), [44–45](#), [50–51](#), [63](#), [178](#), [195](#), [199–201](#), [215–218](#), [220](#), [224](#), [226–237](#), [239](#), [253](#), [263–265](#), [271](#), [274–276](#), [279](#), [282–283](#)
- Philistine [50–51](#)
- Polychrome Mainland [230](#)
- potters' marks [220](#), [231](#), [239](#), [258](#), [264](#)
- pseudo-Minoan [233](#), [234](#)
- Red Minyan [230](#)
- thermal properties [229](#)
- Vapheio cup [233](#)
- Yellow Minyan [230](#), [233](#)
- Powell, Judith [73](#)
- practical mastery theory [123](#)
- private enterprise [24](#), [26](#), [27](#), [124](#), [131–132](#), [202–203](#)
- promontories and headlands [38](#), [40](#), [61](#), [96](#), [100–101](#), [104–106](#), [115](#), [119–120](#), [123](#), [135](#), [141](#), [146](#), [155](#), [171](#), [174](#), [216](#), [220](#), [248](#), [250](#), [273](#), [276](#), [282](#)
- Proximal Point Analysis [205–208](#)
- Pseira (Crete) [43–45](#), [174](#), [186](#), [195](#), [290](#)
- Psiloriti, Mt. (Crete) [96](#), [121](#)
- Psyra (island) [111](#)
- Pteleos (Thessaly) [282](#)
- Pullen, Daniel [47](#), [232](#)
- Purcell, Nicholas *see* [Horden, Peregrine, and Nicholas Purcell](#)
- Pylos (Messenia) [6](#), [13–14](#), [16](#), [18](#), [n:20](#), [24](#), [35–36](#), [56–57](#), [60](#), [64–65](#), [68](#), [70–71](#), [75](#), [88](#), [124–125](#), [130–132](#), [134](#), [142](#), [152](#), [160–161](#), [186](#), [242](#)
- quarter rudder
 - see also* ships, propulsion
- Qatna (Syria) [41](#)

Raban, Avner 159

radiocarbon dating 7, 160, 167–170, 178, 248, 273

rain shadow 105

Rainbird, Paul 184, 285

Ramesses III 19, 36

Rap'anu archive, Ugarit 66

Rapp, George 143–144

Ras Shamra *see* Ugarit

regional/intracultural interaction sphere *see* maritime interaction

spheres

reflexive archaeology 175

Renfrew, Colin 30, 33, 194–195

replica ships 53, 71, 130, 209

see also experimental voyages

research design 143, 162, 165, 166, 177, 287

resistivity *see* geophysical survey

Rhodes (island) 17, 36, 64, 94, 202, 209–210, 276

rigging *see* ship construction

risk buffering 193, 216

roads and paths 120, 183, 188–189, 218, 238, 263, 266, 268, 279

Romanou (Messenia) 160–161, 257

Rönby, Johan 116

rowers 18, 57–58, 60–65, 69–70, 75, 125, 130–132

rowing

see also ships, propulsion

Runnels, Curtis 253

Rutter, Jeremy 233

sail

boom-footed 53–54

brailed 53–54

impact of 83–84, 86–87, 115–116

introduction of 40, 51, 53

positioning of 52–53

sailing *see* navigation

sailing season 40, 87, 103–104, 108, 114

Saint Paul 109

Salamis (Cyprus) 209–210

Salamis (island) 198, 214, 237–240, 258, 259, 266–268

sanctuaries and cult centers

Aigina, sanctuary of Aphaia 242, 265

Ayios Konstantinos, Room A 240–242

Dimini, Megaron B 279–280

- Ithaca, shrine to Odysseus (?) 134
- Mycenae, Cult Centre 240
- Mycenae, shrine to Agamemnon (?) 134
- Sparta, Menelaion 134
- Sardinia 21, 22, 23, 29, 30
- Sarepta (Lebanon) 29
- Saronic Gulf
 - as small world 213–271
 - maritime environment in 213–215
 - trade, pre-World War II 265–269
- Saronic Harbors Archaeological Research Project (SHARP) 47, 243–269
- satellite imagery 162, 174
- Scandinavia 125, 134, 176–177
- scarabs 22, 25, 28
- Schinoussa (island) 204
- Scylla and Charybdis 136–137
- sea breeze 94–95, 100, 104, 106, 108
- sea lanes *see* sea routes
- sea level
 - eustatic 45, 107, 140–141, 143–144, 157, 163, 179
 - isostatic 143
 - maximum marine transgression 45, 141, 144, 157, 171, 273, 277
 - relative 5, 141, 143, 144, 148, 152, 163, 246, 247, 250, 272
- seals and sealings *see* Minoan Crete
- seamarks *see* navigation
- Sea Peoples 19, 20, 54, 65–66, 70
- sea routes 1, 6, 9, 20, 21, 26, 28, 30, 56, 82–83, 96, 110–119, 122–123, 125, 135, 138, 185, 193, 226, 283
- seascapes 9, 45, 122, 186, 188, 191, 192, 209, 258
- sediment budget 146, 179
- sedimentology 158, 167–168, 171
- Selas River (Messenia) 160
- self-organizing systems 205
- Seraglio (Kos) 276
- Seriphos (island) 85
- sewn joinery *see* ship construction
- eytan Deresi (Turkey) 43
- Shaft Grave era 2, 14, 59, 64, 188, 208, 228, 232–233, 264, 270
- “shaft grave,” Kolonna *see* Kolonna
- shaft graves, Lerna 224, 230
- shaft graves, Mycenae 12, 49, 64, 65, 223–225, 265
- Shaw, Maria 55–56

- sheep *see* [pastoralism](#)
- sheltered anchorages
 - see also* harbors, sheltered
- Sherratt, Andrew [8](#), [29](#)
- Sherratt, Susan [8](#), [29](#)
- shipbuilding [35](#), [49](#), [59–60](#), [125](#), [130](#), [288](#)
- ship captains [9](#), [55](#), [63](#), [69–71](#), [84](#), [86](#), [107](#), [109–113](#), [119](#), [130](#), [132](#), [134](#), [139](#), [199](#), [288](#)
- ship construction
 - frame-first [48–49](#)
 - hull-first [48–49](#)
 - mortise-and-tenon joinery [49–50](#)
 - sewn joinery [49–50](#)
- ship sheds [40](#), [121](#), [132](#), [159–160](#)
- ship societies [125–134](#), [288–289](#)
- ships
 - see also* [boats](#)
 - defined [2](#), [4](#)
 - iconographic representations [37–41](#), [43](#), [52](#), [59–61](#), [64–66](#), [68–71](#), [77–80](#), [132–133](#)
 - merchantman [57–59](#), [69](#), [71](#), [80](#), [83](#), [86](#), [89](#)
 - merchant ships [30](#), [38](#), [84](#), [132](#)
 - Mycenaean galleys [42](#), [55](#), [58–65](#), [68–71](#), [83–84](#), [130](#), [132–133](#), [n:186](#)
 - performance [62–64](#), [81–87](#)
 - propulsion [51–54](#)
- shipwrecks
 - Cape Gelidonya [20](#), [25–28](#), [33](#), [43–44](#), [58](#), [83](#), [142](#), [183](#), [186](#), [202](#)
 - Point Iria [20](#), [26–27](#), [43–45](#), [186](#), [195](#)
 - Pseira [43–45](#), [186](#), [195–196](#)
 - Uluburun [22](#), [25–26](#), [28](#), [33](#), [42–44](#), [49–50](#), [58](#), [63](#), [75](#), [83](#), [86](#), [87](#), [142](#), [183](#), [186](#), [202](#)
- side-scan sonar *see* [geophysical survey](#)
- Sidon (Lebanon) [158](#), [176](#)
- Sirens [136](#)
- Sicily [22](#), [30](#), [88](#), [135](#), [137](#), [200](#), [202](#)
- silver and silver mining [22](#), [33](#), [76](#), [223](#)
- Silver Siege Rhyton [64–65](#)
- sirocco* wind [93–94](#), [106](#)
- skala* [192](#), [267](#)
- Sklavos (Salamis) [258](#), [271](#)
- skymarks *see* [navigation](#)
- Skyros (island) [50](#), [78–80](#), [111](#)

small worlds see [maritime small worlds](#)
 Snodgrass, Anthony [24](#), [26](#)
 social networks
 growth of networks [205](#), [207](#), [208](#), [232](#)
 network models [205–211](#)
 preferential attachment of nodes [208](#), [231–232](#), [243](#)
 social network theory and analysis [10](#), [187](#), [190](#), [196–197](#),
[203–205](#)
 social storage [116](#), [191](#)
 Solomon Islands (Oceania) [72](#), [84](#)
 Sophiko (Corinthia) [263](#), [266–269](#)
 southern Argolid [156](#), [193](#), [257](#)
 Southern Oscillation [91](#)
 Spercheios River [145](#), [154](#)
 Sporades Islands [111](#), [283](#)
 springs [18](#), [35](#), [105](#), [121](#), [260](#), [268](#)
 stable isotope analysis [75](#), [168](#), [288](#)
 star-structure compass [126–127](#)
 steering oar [51–53](#), [60](#), [63](#), [75](#)
 Stiri (Corinthia) [252](#), [254](#), [257](#), [258–265](#), [268–269](#)
 stirrup jars [16](#), [21](#), [22](#), [29](#), [44](#), [78–79](#), [239](#)
 straits [94](#), [96–97](#), [99](#), [124](#), [191](#)
 Streif, Hans-Jeorg [152](#)
 Strogatz, Steven [289](#)
 structuration theory [128–129](#)
 structure-contingency framework [269](#)
 Summerfield, Michael [144](#)
 surface survey
 archaeological [5](#), [6](#), [13–14](#), [16](#), [143](#), [156](#), [168](#), [175](#), [176](#), [178](#),
[192](#), [218](#), [226](#), [243–246](#), [251–263](#), [276](#), [282](#), [283](#), [285](#), [290](#)
 geoarchaeological [162–163](#), [168](#), [176](#), [247–248](#)
 swamps see [coastal landforms](#)
 Syro-Canaanite (Syro-Palestinian) [25](#), [26](#), [28](#), [29](#), [32](#), [35](#), [49](#), [54](#),
[58](#), [63](#), [202](#)
 Syros (island) [51](#), [86](#), [112](#)

 talismanic seals [42](#), [55](#), [77](#)
 Tanagra (Boeotia) [59](#)
Tanaja [28](#), [36](#)
 Tandy, David [134](#)
 Tanner, William [149](#)
 Taygetos Mountains [104](#)
 tectonic events
 coastal subsidence and uplift [5](#), [45](#), [141](#), [145](#), [148–149](#), [162](#),

- 173, 247, 248
- tectonic structure 5, 45, 141, 143, 145, 147, 151, 153, 163, 173
- Telemachus 134
- Tel Kabri (Israel) 41
- Tell Abu Hawam (Israel) 29, 32
- Tell el Dab'a (Egypt) 41
- Tantura Lagoon (Israel) 49
- terra rossa soils 94, 253
- terebinth resin 25
- terrace walls, Mycenaean 245, 252, 258, 260–263, 265
see also Kalamianos
- textiles 23, 33, 218
- texts
- Canaanite/Ugaritic 29, 35, 36, 66
 - Cypro-Minoan 29
 - Egyptian 19–20, 22, 28–29, 36, 66
 - Hittite 21, 29–30, 35, 36–37, 64, 66, 120, 274
 - Linear A 37, 55, 231
 - Linear B 7, 14–18, 20–21, 24, 34, 35–36, 64–65, 74–75, 88, 120, 125, 130–132, 201–202, 242, 275, 280, 281, 286–288, 290
 - Thebes (Boeotia) 14, 18, 22, 24, 28, 36, 55, 56, 68, 71, 201
 - Thebes (Egypt) 54
 - Theodosian Harbor (Turkey) 49
 - Thera (Santorini)
see also Akrotiri; flotilla fresco
eruption 41
 - Thermaic Gulf 95, 100, 119
 - thermohaline circulation 97
 - thermohaline front 99, 100
 - Thermopylae (Phthiotis) 184
 - Thessaly 141, 199, 230, 277–283
 - Thomas, Patrick 235
 - tidal marshes and mudflats *see* coastal landforms
 - Tilley, Alec 83
 - Tilley, Christopher 123
 - tholos tombs 13, 234, 236, 278, 280–281, 282–283
 - Thorikos (Attica) 234
 - Thucydides 19, 66–67
 - Tiryns (Argolid) 14, 16–17, 18, 22, 23, 44, 50, 54–55, 142, 161, 238–239, 243, 281, 289
 - tombolo 149–150, 159, 172, 179, 273
 - “tools of exclusion,” 134
 - Toumba Thessalonikis (Macedonia) 199

trade and exchange *see* [maritime trade](#)
tramping *see* [cabotage](#)
travel times [191–192](#)
 see also [cost weighted path distance](#)
tree-ring dating (dendrochronology) [107](#)
Trianda (Rhodes) [276](#)
triaconter [62](#)
Trieste gap [94](#)
Troizen (Argolid) [236](#), [265](#)
Trojan War [19](#), [27](#), [67–68](#), [111](#), [133](#), [136–137](#), [184](#)
Troy, coastal reconstruction [45](#), [141](#), [142](#), [154–155](#), [166](#), [180](#)
Tsoungiza (Argolid) [218](#), [233–235](#), [242](#)
Tudhaliya IV [29](#)
tuna fishing [74](#)
Turkey *see* [Anatolia](#)
Tyre (Lebanon) [158](#), [176](#)
Tzalas, Harry [72](#), [84](#)
Tzortzopoulou-Gregory, Lita [47](#), [266](#)

Ugarit (Syria) [5](#), [26](#), [29](#), [32–33](#), [36](#), [66](#), [88](#), [275](#)
Uluburun *see* [shipwrecks](#)

Vagenas tholos tomb (Messenia) [236](#)

vardari wind [95](#), [100](#)

Vassa (Argolid) [254](#)

Vayia (Corinthia) [174](#), [176](#), [254](#)

viewsheds [9](#), [237](#), [254](#), [256](#), [259](#), [262](#)

Vikings [83](#), [125](#), [134](#), [177](#)

volcanic rock, Aiginetan [35](#), [87](#), [216](#), [229](#), [251](#), [253](#), [263–264](#),
[267](#)

Volos, Bay of [7](#), [32](#), [199](#), [212](#), [277–283](#)

Voutsaki, Sofia [243](#)

Vrokastro (Crete) [290](#)

wall painting

Akrotiri, West House Room [4](#), [39–40](#), [56–57](#)

Akrotiri, West House Room 5, “Flotilla Fresco.”

see also [Flotilla Fresco](#)

Akrotiri, West House Room 5, young fisherman fresco [75](#), [n:288](#)

Ayia Irini, miniature fresco [54](#), [132](#), [160](#)

Egyptian tomb paintings [28](#), [54](#), [76](#)

Iklaina, fresco fragment [60–61](#)

Minoan frescoes in Near East [41](#)

Mycenae, Megaron, fresco fragments [37](#), [40](#), [56](#)

Pylos, Hall 64 fresco fragments [56–57](#), [60](#)

Thebes, fresco fragments [56](#)
“Wandering Rocks,” [136](#)
Ward, Cheryl [44](#)
warfare, naval [58–59](#), [64–68](#), [70](#), [133](#), [226](#)
warriors [41](#), [58–59](#), [61](#), [66–68](#), [70](#), [132–134](#), [223–226](#)
Watts, Duncan [289](#)
wave-cut cliffs and notches *see* [coastal landforms](#)
way-finding [109](#), [123–124](#)
weapons
 sling stones [23](#), [25](#), [224–225](#)
 spear points [23](#), [220](#), [224](#)
 swords and daggers [23](#), [64](#), [217](#), [220](#)
Wedde, Michael [48](#)
Weißes Haus *see* [Kolonna](#)
Wells, Lisa [144](#)
Westerdahl, Christer [185](#)
West House, Akrotiri [5](#), [37](#), [38–40](#), [56–57](#), [64](#), [132](#)
 see also [Flotilla Fresco](#)
wetlands *see* [coastal landforms](#)
wheat [193](#), [221](#), [260](#), [267](#)
winds *see* [environment](#), [Mediterranean](#)
winter voyaging *see* [navigation](#)
world-systems [28](#), [188](#), [205](#)
World Wide Web [208](#)
Wright, James [197](#), [200](#), [226](#)

xenoi [203](#)

Zangger, Eberhard [160](#)
Zygouries (Corinthia) [235](#)